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BRITISH MEDICAL JOURNAL

LONDON SATURDAY JULY 25 1942

REHABILITATION IN THE E.M.S.

BY

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The Oxford Dictionary defines "rehabilitation" as "restoration to privileges." In the medical sense this would signify restoration to the privileges of health, so far as this is possible. In considering the rehabilitation of an individual it is logical to include not only the whole therapeutic procedure but also the mental and material environment to which he is subjected from the moment of the onset of his disease or the infliction of his injury. In the more restricted sense of the term, however, which alone is brought under survey here, efforts to rehabilitate can be considered under the heads of passive physical therapy or the application of physical agents, active (volitional) exercise, and productive occupation.

In many instances the whole of the programme may with advantage be started as soon as the patient arrives in a hospital bed. In general, it can be stated that, if there are no indications to the contrary, the earlier this special rehabilitation treatment is begun the better. Thus, for example, a patient who is admitted from the waiting-list for an abdominal operation will often benefit from pre-operational abdominal and general exercises; the precursors of an operation for an internal derangement of the knee may very usefully be faradic and "active" (volitional) contractions of the thigh muscles; while an individual with a lower limb in plaster ought to begin weight-bearing exercises as soon as he is ambulatory.

In the past a prescription of "rehabilitation" therapy has too often been made out with a view solely to recovery of the diseased or injured region, to the neglect of the general mental and physical make-up. Recent conceptions of the aims of treatment render it improbable that this error will persist; indeed, the danger is that the pendulum should swing too far, to the neglect of those other, equally indispensable, extrinsic factors—massage, electrotherapy, thermotherapy, etc.

Aims

In the strict sense of the term there is no form of treatment which can be designated "curative"; in choosing any therapeutic or prophylactic procedure, one's aim ought always to be to elicit such responses in the tissues and in the mentality of the individual as are likely to assist in the recovery or maintenance of health. To no part of medical or surgical treatment does this apply with greater force than to so-called "rehabilitation" therapy; the physical agents employed can, without gross exaggeration, be looked upon as tissue "insults," and it is necessary to be continually alert lest the insult be so gross, or the tissue so debilitated, that the latter is incapable of response, and consequent harm result.

The therapeutic effects of almost all these physical agents depend primarily upon a stimulation of the peripheral circulation—venous and possibly lymphatic in some cases, arterial in others. As regards massage, this is obvious. To the effects, however, of electrically stimulated muscle contraction a similar statement applies, and this therapeutic measure is an excellent instance of the ease with which the optimum dose of the tissue stimulus may be overstepped. Until recently the therapeutic effectiveness of this stimulus has been in dispute. Magladery and Solandt (1940) have, however, demonstrated that the wasting of denervated muscle can be retarded by such stimulation, properly applied. They have further shown that the maximum effective "time" dose is of the order of "a stimulus which is interrupted for 5 seconds every 5 seconds and applied for two minutes three times a day." This is in contradistinction to the method usually taught, in accordance with which a current of almost maximal intensity of stimulus is applied at a rate of about 2 per second with no prolonged pause, the whole treatment lasting up to 10 minutes or even longer—a total of stimulation time incomparably greater than that of Magladery and Solandt's maximum. This matter is worthy of stress, especially as, in a recent article (Gutmann and Guttmann, 1942), the statement appears that "the galvanic exercise treatment is the more successful the more the individual [denervated] muscles are exercised." Over-stimulation of such wasted and grossly abnormal muscle is entirely comparable to the administration of large doses of strychnine to a failing myocardium. A similar caution is relevant to all physical, as indeed to all therapeutic, agents. The dose must be graduated in accordance with the residual capacity of the individual and of his tissues to respond; an adequate dose for one would constitute gross over-stimulation in another.

Certain conditions also are notoriously sensitive to excessive *active* use: that in which the danger is most commonly recognized is dislocation of an elbow, especially in children or adolescents, though certain derangements of the knee are also susceptible. On the other hand, the safe or rather optimum degree of activity can often be assessed only after trial, under skilled medical supervision. Every rehabilitation department ought therefore to be continually supervised by a medical man skilled in the use of physical agents. Reference will be made later to the lack of this feature in the majority of hospitals otherwise well equipped, and to the reasons for this defect.

There is a growing tendency to decry the value of so-called passive therapy and to depend almost entirely upon the therapy of active function. Both are indispensable and can often be usefully employed concurrently at certain stages in the history of an injury or an ailment. Where normal tissue function is for any reason suspended, and tissue nutrition, through defective blood supply, is in consequence suffering, artificial stimulation of functional and vascular activity may partially replace normal conditions. One of the most striking and tragic illustrations of neglect of this principle is the permanently board-like hand which may result from the complete immobilization, with weight extension and without physiotherapy, of an upper limb for a high humeral fracture. "Passive" and "active" therapy do not constitute stages in treatment. Voluntary effort ought to form part of rehabilitation treatment at as early a stage as it may do so with safety, and passive therapy is with advantage often continued long after recovery of function has begun.

Provision in the E.M.S.

In the Emergency Medical Service there is very extensive provision of facilities for all these activities. Because in time of war the great preponderance of disability in the Services is due to injury, while in totalitarian war a large proportion of civilian disability is also due to enemy action, the earliest hospitals in the E.M.S. to be fully equipped in this respect were the so-called orthopaedic centres. At each of these there have for some time existed departments of physiotherapy, of

local and general remedial gymnastics, and of occupational therapy. At every such centre which has been enlarged by the building of hutted extensions these activities are housed in several specially designed huts; while at those centres at which the original hospital buildings did not necessitate this enlargement, suitable indoor spaces have been allocated to these purposes and the appropriate structural alterations made.

It was, however, obvious from long before the beginning of the war that these comparatively few orthopaedic centres would be insufficient for the numbers of war casualties which occurred or arrived in this country. The next step, therefore, was a much wider provision of rehabilitation facilities in the Service, in accordance with a decision of the Minister that every Class I E.M.S. hospital of 300 beds and upwards should reserve and prepare enough space to accommodate physiotherapy and indoor treatment by remedial exercises.

Later still, three types of fracture department, "A," "B," and "C," were selected—"A" and "B" as parts of general hospitals for long-stay and short-stay fractures, respectively, while the "C" departments, for civilian out-patients, are situated partly in hospitals and partly in certain clinics. In connexion with the "A" departments, as full provision for rehabilitation treatment, in proportion to size, is being provided as at orthopaedic centres; while "C" hospitals and clinics have been chosen because they already possess rehabilitation facilities adequate to their functions.

The *housing accommodation* for such a rehabilitation department at a large, hutted orthopaedic centre consists of the following: (1) A building, 144 ft. by 24 ft., for massage, electrotherapy, radiotherapy, thermotherapy (including short-wave therapy in some), and the earlier stages of remedial exercise; at one end of the building are "offices" for the staff. (2) A gymnasium, 60 ft. by 24 ft., for more advanced local and general rehabilitation gymnastics. (3) A room or rooms for handicrafts and carpentry.

Outdoor space is generally available for the more active forms of therapy, and full use is made of this, and especially of football, cricket, tennis, and even golf facilities. Stereotyped "P.T." is dead.

In *equipping* these departments with technical apparatus, at first only the most simple types were provided, and particularly such types as would be in greatest demand for the treatment of battle and bomb casualties. Gradually, however, it has been possible to supply some of the more specialized forms of equipment, and the rehabilitation departments are becoming more and more elaborately set out, while at the same time the provision of unessential varieties of apparatus is avoided.

The *technical personnel* which are recognized as being necessary to carry out the varied treatment belong to three groups—namely, members of the Chartered Society of Massage and Medical Gymnastics, male physical-training instructors, and occupational therapists.

With such facilities as have just been briefly outlined, rehabilitation activities at a large orthopaedic centre are obviously extensive, complicated, and diverse. The simplest of these begin in bed, and it is now the routine in E.M.S. hospitals for every patient who is confined to bed to perform at stated times during the day such exercises as are medically advisable, so that when confinement to bed is no longer necessary the individual ought to find himself at a much more advanced stage of general fitness than he would have been under the former regime of almost complete passivity. Pre-operational exercise and muscle stimulation are also coming more and more into use, to the obvious advantage not only of the muscle groups at the site of operation but of the patient's general tone and resistance.

All those who are ambulatory ought to attend the various departments. In the so-called "physiotherapy" department the members of the C.S.M.M.G. not only administer the various therapeutic agents there in use but also supervise the earlier stages of remedial exercise, with patients singly or in groups and exercising either freely or by means of gymnastic apparatus.

Many large hospitals are now provided with physical-training instructors, in the majority of instances supplied by the Army gymnastic staff and consisting of N.C.O.s who, in addition to their instructional training, have undergone a special course of remedial gymnastics. As soon as a convalescent is capable of doing so, he joins one of the carefully graded groups for physical exercise. In its nature this is entirely divorced from the old "physical jerks," and is made up of a combination of more or less formal physical training with indoor and outdoor games. In the winter much of this treatment is carried out in the gymnasia, already described; but advantage is taken of any out-of-door space, and at many of the E.M.S. hospitals it is possible to make use of football, tennis, and golf rehabilitation.

Occupational therapy is a standard part of treatment at all orthopaedic centres and at every hospital with a "Group A" fracture department, and trained personnel for this work are increasing in numbers, the Ministry having instituted an intensive course of training at one of the orthopaedic centres. The remedial aspect of productive occupation is partly physical and partly psychological, and the occupations consist of light crafts such as weaving, basket-making, and wool-mat-making, as well as of heavier work, mainly carpentry. In addition to these, at many centres the hospital gardens function as remedial agents.

The fullest advantage cannot be taken of such a complex organization, in which the same patient is undergoing treatment in all the three main divisions of rehabilitation, unless there is an efficient system of timekeeping, and at some large E.M.S. hospitals such a system is in use. This is under the supervision of an *organizer*, whose duty it is to see that every patient observes his therapeutic time-table.

Medical Personnel.—It must therefore be obvious, and it is now officially recognized, that *specialized medical supervision* of these activities is essential to the complete efficiency of a rehabilitation department in order to ensure the correct application of all the methods and physical agents used and, of even more urgent importance, to hold the proper balance between activity and rest in a population consisting not only of convalescents but of convalescents at varying stages of recovery. This medical supervision, however, has provided the most difficult of all the problems in connexion with the organization, and it would be idle to suggest that the difficulty has been overcome. That it has not is due to the very great expansion of rehabilitation facilities under the Emergency Hospital Scheme—at the newly established orthopaedic centres, in all Class I hospitals of 300 beds and over, in the special fracture hospitals, and at certain other special centres, such as neuroses centres, head centres, etc.; whereas it is almost literally accurate to say that before the war there were no specialists in physical medicine attached to hospitals outside the Metropolitan Area and the comparatively few large provincial centres. Even in London a typical "sector," with a teaching hospital at its apex, might furnish one or at most two such individuals in normal times attached to the teaching hospital, while with wartime expansion there have sprung up in the sector four or five other centres each of which may at present contain two or three times as many casualty beds as its parent and each of which ought to be provided with a physical medicine specialist. In the extra-metropolitan "regions" the situation is even worse, and is being progressively aggravated by the withdrawal into the Army of ever greater numbers of medical men. This withdrawal threatens to render futile, owing to lack of candidates, a scheme for an intensive course of training of medical men in rehabilitation therapy set up under the Emergency Medical Service. The desirability of such medical supervision, now officially recognized, ought to be obvious; its virtual indispensability, however, is fully realized only after comparing centres where it exists with those where there is no such unified control.

The policy of the Ministry is, at any rate at present, not in favour of the setting up of rehabilitation "centres." After the war, however, it is almost certain that such institutions will be found necessary, and the present emergency might, if the individuals were available, lead to the equipment of a number of men and women with a training which would render them competent to supervise a form of therapy whose post-war establishment will represent a great and long-advocated advance in the treatment of injury and disease.

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Magladery, J. W., and Solandt, D. Y. (1940). *Brain*, **63**, 255.

DIPHTHERIC HEART-DISORDERS IN CHILDREN

BY

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Among all the ill effects which diphtheria may cause in childhood the damage inflicted on the heart is the most serious. The vast majority of deaths in children due to this disease occur as a result of injury to the cardio-vascular system. A few cases of the laryngeal type result in death from mechanical obstruction and some others from pharyngeal paralysis. Practically all the remaining deaths are due to some form of cardiac failure.

Knowledge of the pathology, clinical signs, and treatment of diseases of the heart has been much increased in recent years by electrocardiography, and it is proposed to give an account of 100 cases of diphtheria with myocardial lesions observed from the onset to either convalescence or termination. These fall into three groups: (1) lesions of the heart musculature; (2) abnormalities of rhythm; (3) interference with conductivity.

The Myocardial Lesion

The clinical signs of this condition are well known. Chief among them are listlessness, pallor, and increase or decrease in the pulse rate. Albuminuria may be found, and when present to a marked extent during the early stages of the disease is regarded as a bad prognostic sign.

The Electrocardiogram.—Alterations of the T-wave, S-T stretch, or of both, are often found. The T-wave is low in comparison with the preceding P-summit, the height of which is normally half that of the T. In other cases the T-wave is either absent or inverted or diphasic, in which latter case the inverted part is followed by a final wave. These signs are regarded as pathological in children if they occur in lead I or leads I and II, or in all three leads. It has been shown in recent years that the degree of dislocation of the S-T stretch is of as much importance as variations of the T-wave in myocardial lesions, perhaps of even greater importance. The S-T stretch is compared with the level of the preceding P-R stretch to estimate its dislocation. Slight dislocation of less than 0.5 mm. may be disregarded, but any dislocation exceeding 1 mm. is pathological. It must be remembered that variations of this type are seen normally in lead III, that a flat or diphasic T-deflection may appear in lead II in children with meteorism, and that after treatment with digitalis the S-T stretch is dislocated and the T-wave flattened in lead II. If these variations are kept in mind the abnormalities in the electrocardiogram can be considered as due to myocardial damage caused by the diphtheric toxin. Indications of the pathological changes in the myocardium are sometimes found when the clinical signs are still doubtful. At the same time evidence of myocardial damage is sometimes still found when clinically the child appears to be quite recovered. The importance of the latter fact is obvious. At this hospital no child who has had a myocardial lesion is discharged until the electrocardiogram has returned to normal. Failure to ascertain that a myocardial lesion has completely cleared up may account for reports about slow recovery after diphtheria in certain cases, and for those tragic instances when a child dies suddenly at home after discharge from hospital. The electrocardiogram returns to normal again after 3 to 4 weeks in light cases, after 6 to 7 weeks in moderately severe cases, and after 10 to 13 weeks in severe cases in which a myocardial lesion is present without any disturbance of conductivity. In the present series of cases 38% show evidence of myocardial damage without any disturbance of conductivity. Some examples of variation in the T-wave and S-T stretch in cases of diphtheric myocarditis are shown in Figs. 1–6. All of them are lead II.

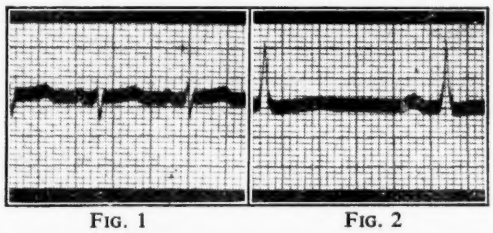

FIG. 1 FIG. 2

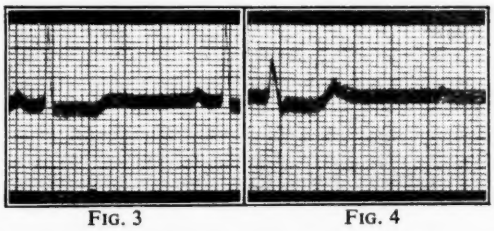

FIG. 3 FIG. 4

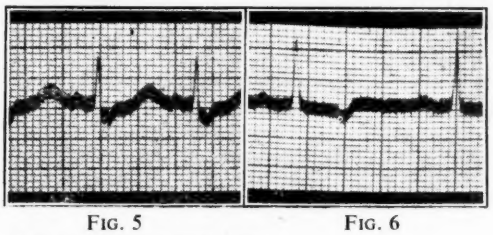

FIG. 5 FIG. 6

FIG. 1.—T-wave very low
FIG. 2.—T almost isoelectric.
FIG. 3.—S-T stretch dislocated, T diphasic.
FIG. 4.—S-T dislocated and almost horizontal.
FIG. 5.—S-T a steep line, connecting S with T.
FIG. 6.—S-T dislocated, T inverted.

Abnormalities of Rhythm

Sinus Tachycardia.—Sinus tachycardia is very often seen during the febrile period of diphtheria, and is of no special significance. Tachycardia which persists into later convalescence should be carefully investigated. If the tachycardia is due to a myocardial lesion, evidence of the latter will be found together with the signs of the tachycardia.

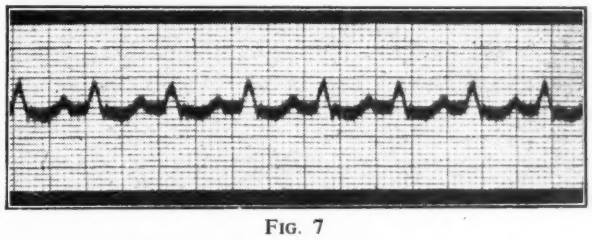

FIG. 7

Case 1: Fig. 7.—Beryl H., 4½ years; 29/12/1941; 15th day of disease.

Lead II: Regular tachycardia, rate 120. R notched; voltage 4/10 mV; duration 0.12 sec. S-T below the base-line. T diphasic.

Sinus Bradycardia.—Bradycardia is often found in the early convalescent stages of diphtheria as in other infectious diseases. The condition may, however, be due to cardiac damage. Gross bradycardia should always be carefully investigated to exclude a cardiac lesion. An electrocardiogram enables a differential diagnosis to be made at once.

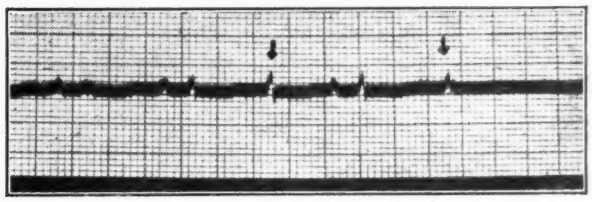

FIG. 8

Sinus Arrhythmia.—Sinus arrhythmia is a common cause of cardiac irregularity in childhood and has no pathological significance. It should be carefully distinguished from more serious forms of irregularity, as otherwise the activity of a healthy child may be quite unnecessarily restricted.

Extrasystoles.—Extrasystoles are not generally regarded as of serious import, and to a certain point the same may be said of them when they occur during the course of diphtheria.

Case 2: Fig. 8.—Robert L., 5 years; 22/8/1941; 22nd day of disease.

Lead II: P–R 0.23 sec. (partial a.-v. block). Ventricular complex of very low voltage; splintered and notched. T inverted. There are two extrasystoles, indicated by arrows.

Interference with Conductivity

The Auriculo-ventricular Block

Partial a.-v. Block.—This is a serious condition in which there is a lesion either of the a.-v. node itself or of the bundle of His and the surrounding myocardium. It occurs in severe infections, mostly of the gravis type. Clinical evidence of the condition is limited to bradycardia together with enlargement of the heart, but a definite diagnosis is impossible without an electrocardiogram. This latter shows a lengthening of the P–R interval, which normally in children does not exceed 0.12 second. A P–R interval of 0.2 second or more must be regarded as definitely pathological. Partial a.-v. block was found in 17% of the present series.

Case 3: Fig. 9.—Rosalie B., 3 years; 18/10/1941; 13th day of disease.

Lead II: Action regular. P–P 1.47 sec. Rate 40. P–R 0.36 sec. R notched near the peak. S–T below the base-line. T upright.

Complete a.-v. Block.—Clinical signs. An early symptom of the condition is often a syncopal attack in which the child is blanched and collapsed. The most marked feature is the extreme bradycardia, the pulse rate dropping to 30–40 a minute. Following a syncopal attack the patient remains pale and cyanotic, with coldness of the face and extremities and a livid tinge in the cheeks. The expression is anxious and there is often precordial or abdominal pain, together with marked restlessness and vomiting. Within one or two days the liver shows evidence of enlargement. Complete a.-v. block was found in 5% of the present series.

The electrocardiogram shows that the P-summits occur at equal intervals. The ventricular complexes also occur at equal intervals, but their rate is much less than that of the auricles. The varying length of the P–R intervals shows that there is no connexion between the auricular and ventricular contractions.

Case 4: Fig. 10.—Rosalie B., 3 years; 20/10/1941; 15th day of disease.

Lead II: P–P 0.65 sec. Auricular rate 92. R–R 2.00 sec. Ventricular rate 30. The auricle is beating three times more quickly than the ventricle. It is a 1:3 block. R widened and notched; duration 0.18 sec.; voltage 1/4 mV. T upright.

Lead III: P–P 0.65 sec. Auricular rate 92. R–R 2.30 sec. Ventricular rate 26. Duration of ventricular complex 0.14 sec. T inverted.

Bundle-branch Block

Partial Bundle-branch Block.—In the present series 19% of the cases showed evidence of this condition, which, as in the case of partial auriculo-ventricular block, can only be definitely diagnosed by use of the electrocardiogram. This shows a prolonged duration of the ventricular deflection, which normally does not exceed 0.05 second. In this condition it may be prolonged to 1 second or more, while the ventricular deflections are seen to be splintered and notched.

Case 5: Fig. 11.—Francis W., 5½ years; 24/2/1942; 9th day of disease.

Lead I: Action regular. R–R 0.75 sec. P indiscernible. Ventricular complex of low voltage. R splintered and thickened; duration 0.1 sec. S–T below the base-line. T isoelectric.

Lead II: P–P 0.80 sec. Rate 75. P–R 0.20 sec. Ventricular complex splintered at the peak; voltage 6/10 mV; duration 0.1 sec. S–T far below the base-line. T diphasic.

Lead III: R–R 0.80 sec. P indiscernible. Ventricular complex splintered and notched; voltage low; duration 0.05 sec. T isoelectric.

Complete Bundle-branch Block.—This condition occurred in 4% of the present series. The chief characteristics seen in the electrocardiogram are that R, S, and T waves are of high voltage; that a marked R-deflection is followed by an inverted T, while an exaggerated S-deflection is followed by an upright T, and that the duration of the ventricular complex is prolonged together with splintering and notching of the deflections.

Case 6: Fig. 12.—Ronald R., 5 years; 4/9/1941; 10th day of disease.

Lead I: P–R 0.31 sec. R splintered and notched; voltage 7/10 mV; duration 0.15 sec. T inverted.

Lead II: Voltage of S 1¼ mV; duration 0.11 sec. T upright.

Lead III: Exaggerated S; voltage 1 mV; duration 0.14 sec. T upright.

Left bundle-branch block.

Case 7: Fig. 13.—Jean W., 2 5/12 years; 25/2/1942; 8th day of disease.

Lead I: P–P 0.82 sec. Auricular rate 73 S–S 2.39 sec. Ventricular rate 25. S splintered; voltage 6/10 mV; duration 0.14 sec. T upright.

Lead II: Auricular deflection almost indiscernible. S–S 2.10 sec. Ventricular rate 28. Ventricular complex shows a notched downward deflection, the voltage of which is 1/3 mV, the duration 0.1 sec.

Lead III: Ventricular complex shows a very high R; voltage 1¼ mV; duration 0.1 sec. T inverted.

Right bundle-branch block.

Auricular Fibrillation

The electrocardiogram has shown that auricular fibrillation does not only occur in severely damaged hearts, but may also be seen as a transitory phenomenon in children when the heart muscle is undamaged.

Transitory Auricular Fibrillation.—This condition may arise in children during diphtheria, and may last a few hours or a few days. No abnormal clinical signs can be detected either before or after the attack, and the patient is not disturbed or distressed. The prognosis is good. The electrocardiogram shows typical auricular fibrillation, but there are no other signs of myocardial damage. The condition occurred in 2% of the present series.

Case 8: Fig. 14.—Irene G., 5 years; 9/10/1941; 29th day of disease.

Lead II: Action irregular. R–R 0.56 to 0.64 sec. Ventricular complex of normal configuration; voltage 8/10 mV; duration 0.05 sec. P-summits absent. The ventricular deflections are connected by oscillations. T-waves deformed by oscillations falling with them.

Lead III: Action irregular. R–R 0.60 to 0.63 sec. P absent. Ventricular complex of normal configuration; voltage 6/10 mV; duration 0.05 sec.; connected by oscillations.

Two days later the electrocardiogram did not show anything abnormal. The child had a normal convalescence.

Auricular Fibrillation in Severe Heart Lesions.—Patients who develop this condition show signs of myocardial damage for a period, sometimes long and sometimes short, before the onset of auricular fibrillation. The prognosis is very poor, especially in those cases in which congestion was present before the fibrillation started. According to Lewis, "the auricular fibrillation loads the already defective muscle with an extra burden." The electrocardiogram shows all the signs of a severely damaged heart muscle.

Case 9: Fig. 15.—Robert B., 3 years; 12/2/1942; 55th day of disease.

Lead I: Action irregular. P indiscernible. There are oscillations in the first cycle. Ventricular complex: voltage very low (1/4 mV). S–T on the base-line. T round.

Lead II: Action irregular. P absent. There are oscillations connecting the ventricular deflections, which are of low voltage (1/2 mV). T round and deformed by oscillations.

Lead III: Action irregular. P indiscernible. Voltage of ventricular complex 1/2 mV; duration 0.05 sec. T very low in some cycles, isoelectric in others. There are oscillations between the ventricular complexes.

The Occurrence of Death from Diphtheric Heart-disorders in Children

Death may occur, sometimes with startling suddenness, in the first ten days of the disease. This often happens in severe cases of the nasopharyngeal type due to the gravis strain of the organism. The fatal issue in these cases is usually brought about by one of three conditions:

A. *Gross Myocarditis.*—The electrocardiogram shows evidence of extreme myocardial damage.

Case 10: Fig. 16.—Alan W., 9 years: admitted 26/7/1941. Onset 25/7/1941. Severe nasopharyngeal diphtheria. K.L.B.+. Antidiphtheria serum 60,000 units intravenously. 28/7/41: Membranes separating. 2/8/41: Vomiting, pallor, cold extremities; blood pressure 110/84. 3/8/41: Electrocardiogram taken 12 hours before death.

Lead I: Action irregular. R–R 0.85 to 0.87 sec P imperceptible. Ventricular complex splintered; voltage 1/5 mV; duration 0.16 sec. S–T dislocated. T isoelectric.

Lead II: R–R 0.85 to 0.89 sec. P absent. Ventricular complex shows a downward deflection of 1/5 mV voltage and 0.15 sec. duration. T faintly indicated.

Lead III: R–R 0.80 to 0.87 sec. P indiscernible. Ventricular complex: voltage 1/3 mV, duration 0.1 sec. T isoelectric.

B. *Acute Complete Heart-block* (*Case 11: Fig. 17*).—Rosalie B., 3 years. Onset gradual, about one week. Admitted 11/10/1941. Severe pharyngeal diphtheria. K.L.B.+. Anti-diphtheria serum 30,000 units intraperitoneally. 12/10/41: membranes separating. 16/10/41: blood pressure 76/63. 18/10/41: syncope; partial a.-v. block; myocardial lesion. 19/10/41: complete heart-block; pulse 36; cardiac dullness enlarged; liver swollen; vomiting. 20/10/41: pulse rate 20; cyanosis; electrocardiogram taken 2 hours before death.

Lead III: Complete a.-v. block. Auricular fibrillation.

C. *Ventricular Tachycardia* (*Case 12: Fig. 18*).—Brian D., 3 years, admitted 13/12/1941; 4th day of disease. Severe nasopharyngeal diphtheria. 60,000 units anti-diphtheria serum intraperitoneally. Extremely ill; pale; hands and feet cold. Heart enlarged; "tick-tack" rhythm. Electrocardiogram shows complete heart-block. 12 p.m.: Child very restless; pulse weak. 14/12/41: semi-conscious; cyanotic. Offensive oral fetor. Electrocardiogram taken 1/2 hour before death. Regular tachycardia. R–R 0.49 sec. Rate 122. P indiscernible. The ventricular complexes are atypical, and one complex follows the other without any interval. Duration 0.18 sec. T diphasic. There is a longer interval after the last cycle in the third lead.

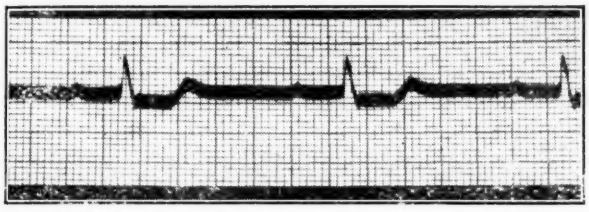

FIG. 9

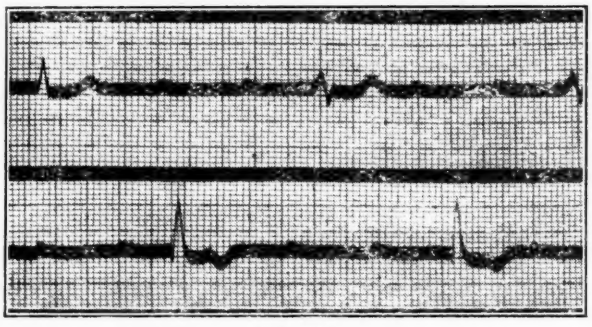

FIG. 10

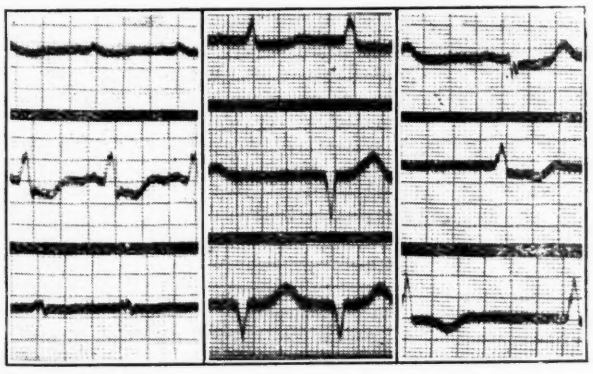

FIG. 11 FIG. 12 FIG. 13

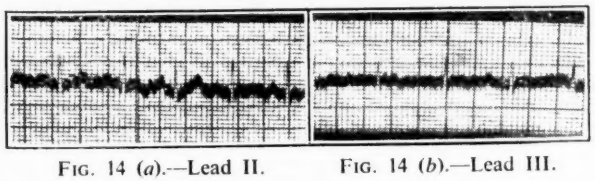

FIG. 14 (*a*).—Lead II. FIG. 14 (*b*).—Lead III.

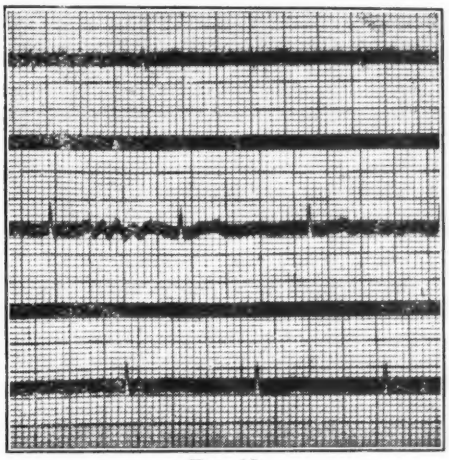

FIG. 15

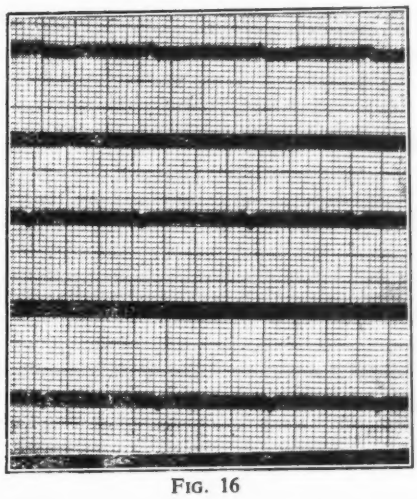

FIG. 16

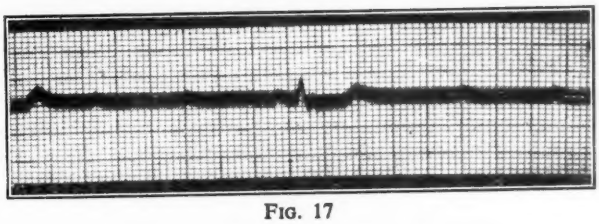

FIG. 17

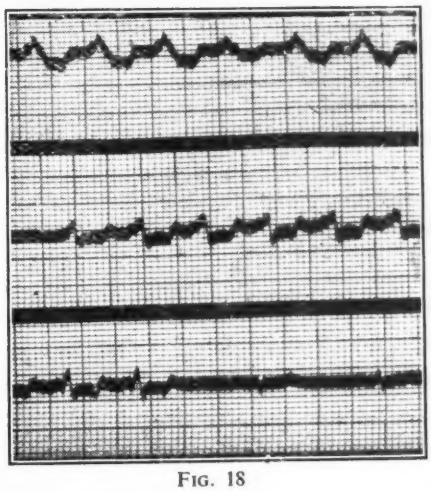

FIG. 18

The examples given above are sufficient to show that electrocardiographic investigation in support of careful clinical examination of the patient is desirable in the treatment of any case of diphtheria other than the mildest, and especially when there is reason to suspect the presence of myocardial damage. It is only by the use of the electrocardiogram that a clinical suspicion of myocarditis can be definitely confirmed.

In general it is possible to discharge a patient who has suffered from a mild attack of diphtheria in four weeks, from an attack of moderate severity in six to seven weeks, while those

with a severe infection may have to be retained in hospital for three months or longer. Where evidence of a myocardial lesion has been found the patient should not be discharged until the electrocardiogram has returned to normal.

I wish to express my thanks to Dr. J. A. Charles, medical officer of health, Newcastle-upon-Tyne, for permission to carry out the investigation, and to Dr. E. F. Dawson-Walker, medical superintendent of the Hospital for Infectious Diseases, Walker Gate, for assistance in the preparation of this article.

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A CASE OF INTRA-UTERINE INFECTION OF THE FOETUS BY GAS-GANGRENE ORGANISMS

BY

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The following case is recorded as one of unusual clinical and radiological interest.

Case Report

The patient, a 2-para aged 30, was 16 weeks pregnant when she first attended the ante-natal clinic at the Radcliffe Infirmary in November, 1940. Her first child, weighing 6 lb. 11 oz., was born in 1930, and the second, weighing 9 lb. 8 oz., was stillborn the following year. Two months after the second confinement it was discovered that the patient was suffering from diabetes mellitus, and it would seem probable that this condition was present during the pregnancy and was responsible for its unfortunate ending. From the time diabetes was diagnosed in 1931 until the patient attended the Radcliffe Infirmary in 1940 she had required 30 units of insulin daily, and at her first ante-natal examination she was found to have just a trace of sugar in the urine, but no acetone or albumin.

Obstetrical progress was uneventful until Feb. 7, 1941, when complaint was made of sickness, and hydramnios was found to be present. The blood pressure was 110/80, and the urine was free of sugar and albumin. Foetal parts could not be felt, and, to investigate the cause of the hydramnios, a radiograph was taken. One apparently normal foetus presenting by the vertex was reported. The following week there was a considerable increase in the size of the uterus; acetone and sugar were present in the urine, but there was no albumin. The patient was more uncomfortable and was admitted to hospital. The foetal heart was audible and foetal movements were felt. In the next 10 days the abdomen increased rapidly in size and oedema of the lower extremities occurred. At this time the foetal heart could not be heard, so a second radiological examination was made on Feb. 27. It revealed a breech presentation but no overlapping of the skull bones or other features suggesting foetal death. On March 4 the patient stated that she could not feel any foetal movements, and no foetal heart could be heard.

On March 8 a further radiograph revealed a breech presentation with slight overlapping of the skull bones and a large bubble of gas within the shadow of the foetal head (see Fig.). Other films taken with the patient standing upright demonstrated gas and a fluid level within the foetal skull. The foetal brain and its investing membranes seemed to have collapsed, as the air bubble could readily be displaced to different positions by changing the woman's posture. No other bubbles of gas were seen within the foetus. The previous films were re-examined, and the second radiograph, taken on Feb. 27, showed several smaller gas bubbles within the shadow of the foetal skull which could not be accounted for by gas in the mother's intestinal canal. The diagnosis was that of intra-uterine foetal death, and it was suggested that there was a gas infection of the foetal skull. Arrangements were made for the pathological laboratories to investigate the foetus bacteriologically as soon as it was delivered.

On March 16 spontaneous delivery of a macerated foetus occurred. The foetal body was soft but the skin was intact. Within an hour of delivery radiographs were taken of the foetal body and the presence of gas in the skull was confirmed. No

Radiograph taken on March 8. Intracranial gas bubble is well shown.

further collection of gas was seen in any situation. The skeleton was well developed and both lower femoral epiphysial centres were ossified. Dr. A. H. T. Robb-Smith opened the skull, and some of the macerated cranial contents were taken for bacteriological examination. There was extreme maceration but no naked-eye appearance of gas infection of the tissues. Sections from the brain and liver showed an extreme degree of autolysis, but no gas-forming organisms were seen. Bacteriological culture of the smears taken from the cranial contents was reported by Dr. Vollum to show a pure culture of an organism which was identified as *Cl. welchii*. The puerperium was uneventful, and except for a temperature of 99° on the third and fourth days it was apyrexial.

It is interesting to note that on Dec. 28, 1941, this patient was delivered of a healthy living female child after spending many weeks in hospital so that her diabetes could be controlled.

Discussion

This is a case of intra-uterine infection of the foetus with gas-forming organisms occurring in a woman suffering from diabetes mellitus. Hydramnios and increasing oedema of the lower extremities developed at the thirty-second week of gestation, and at this time there was considerable difficulty in controlling diabetes. A fortnight later, at the thirty-fourth week, there were signs suggesting foetal death, and radiographic examination revealed bubbles of gas within the foetal skull. Seventeen days after this a macerated foetus was delivered and a pure culture of *Cl. welchii* was obtained from its intracranial contents. There was no evidence of maternal toxaemia due to gas-forming organisms either before or after delivery. It would appear that the foetus died 17 or 18 days before delivery, as the heart had been heard on Feb. 25 but not on the 27th. The films taken on the 27th revealed small collections of gas in the foetal skull. Presumably the infection occurred after the death of the foetus, although it is possible that it was the cause of death. It is difficult to explain the path of

infection: there had at this time been no interference and no vaginal examination had been made. There was no evidence of a low-lying placenta and no apparent focus of infection elsewhere in either the mother or the infant. It would seem, therefore, that infection was blood-borne and transmitted through the placenta. Unfortunately the placenta was not examined bacteriologically. It is also difficult to know why infection was localized to the foetal skull, especially in view of the fact that gas was known to be present for 17 days before delivery and was detected in no other organ either by radiological examination or at necropsy. It is known that the liquor was not grossly infected, for no gas was present in the amniotic sac. Had the foetal skull been opened during the process of birth a pure culture of *Cl. welchii* would have been liberated in the genital tract. That this is possible should be considered when perforation is performed on a dead foetus or when Willett's forceps are applied to the scalp of such a foetus.

The relevant questions to be answered are: How often does gas infection of a foetus occur, and what is the path of infection? It is not uncommon for gas to be seen in all the principal vessels of the body within 24 hours of delivery, presumably secondary to infection of the placenta or the vessels of the umbilical cord; but one of us has investigated 8 cases, in addition to the one recorded, of suspected foetal death by examining the mother in the erect position, and no gas shadows have been observed.

THIOUREA AND WOUND REPAIR

BY

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The value of local applications of urea in the treatment of septic wounds was demonstrated in 1915 by Symmers and Kirk, and has been confirmed by many subsequent workers, including Millar (1933), Foulger and Foshay (1935), Robinson (1936), Muldavin and Holtzmann (1938), and Stonham (1941); while Cummins (1942) has shown that urea in concentrated solutions is an effective bactericide.

In 1929 Hammett reported that mitotic division and cell proliferation during wound repair were promoted by certain organic compounds containing a thiol, or sulphydryl group, and he advanced the theory that tissue reconstruction was associated with the presence of free -SH groups (Hammett and Reimann, 1929), an explanation also put forward by Rapkine (1930), and accepted by Riley (1940) in an important survey.

Now, thiourea, the sulphur analogue of urea, resembles urea in many of its properties, and, furthermore, contains a latent or masked -SH group; consequently, its possible therapeutic effect in wound repair appears worthy of investigation. Thiourea is of very low toxicity, and may be obtained in a pure form, since its solubility in water at ordinary temperature is only about 1 in 30, which is much less than that of the ammonium thiocyanate from which it is prepared. Thiourea is much more stable than the typical thiol compounds. Its aqueous solution may be sterilized by boiling, and keeps well, although long exposure to air and light results in some decomposition, as shown by the gradual appearance of a precipitate of sulphur and dicyanamide.

Clinical Reports

For the preliminary investigation, ulcers of the static chronic type were selected for treatment. Two series of observations were made, the first being undertaken by J. G. Waugh, M.B., B.Ch., of this University, to whom I am indebted for the following report:

Fifteen cases were treated, in which the ulcers were characterized by extreme chronicity and recurrence due to fibrosis, exposure to trauma, poor blood supply, or polysepsis. After preliminary cleansing, the thiourea was applied in the form of a 1% aqueous solution on a gauze dressing kept freely moist with the reagent. Application in all cases was followed by a brisk local reaction, accompanied by convergence of the epithelial margin. The response increased up to the eighth day and in some cases progress continued up to the twelfth day. After this, application of thiourea had no further obvious effect, and if persisted in merely tended to soften and macerate the epithelial margin.

The second series of cases was investigated by E. Kawerau, M.B., B.Ch., the treatments being carried out in Dublin at Dr. Steevens's Hospital and at the Adelaide Hospital.

Thirty-two cases were treated, the subjects being mostly working-class women beyond middle age. In all of them the ulcers were due to a varicose condition of the veins of the leg, and in more than half had a chronicity of over 5 years. Observation of all the cases showed that thiourea has a definite stimulative effect on the proliferating granulation tissue. When conditions are favourable the optimal response is reached within 12 days, although large ulcers of 0.5 cm. depth have filled with healthy granulation tissue up to their epithelial margins within a week. When this has occurred the treatment should be discontinued, as otherwise fibroblastic proliferation becomes exuberant and impedes epithelial growth, as already pointed out by Riley.

Method of Treatment

The procedure adopted in applying the thiourea is important. The most effective results followed the use of a 1% aqueous solution of thiourea (B.D.H.), applied on gauze or lint and kept moist by renewal every three to four hours. If the dressing is allowed to dry it adheres to the granulating surface, and is apt to cause damage when the dressing is renewed. If evaporation is prevented by use of a completely occlusive covering over the dressing, there may, for some unexplained reason, be considerable local pain. The difficulty of providing a continuously moist dressing for externe patients was overcome by the use of a hygroscopic paste, prepared by boiling 1 g. of thiourea and 2 g. of starch in 100 ml. of water. When the mixture had become of uniform consistency it was allowed to cool, and then 5 ml. of glycerol was added. This paste was applied on gauze or lint cut so as to fit the ulcer surface accurately. This was covered with a larger piece of lint, a thin layer of cotton-wool, and finally a broad bandage. No occlusive material is used. Where practicable the dressing is reapplied daily.

Conclusion

The mechanism of the action of thiourea and the other thiol compounds effective in promoting wound repair awaits elucidation. The only physiological property so far ascribable to thiourea is that of inhibiting the catalytic oxidation of ascorbic acid in aqueous solution (Fearon and Kawerau, 1942). As ascorbic acid is intimately associated with collagen formation and fibroblastic growth (Eddy and Dalldorf, 1941), the therapeutic action of thiourea may reside in its protective effect on the vitamin mobilized locally for tissue repair.

I wish to record my thanks to my two collaborators for the trouble they have taken in the clinical investigation of the action of thiourea; I also gratefully acknowledge the grant from the Medical Research Council of Ireland, which has made it possible for Mr. Kawerau to undertake his part in the work. The case histories and details of individual treatment will be published elsewhere.

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F. R. Whitehouse and C. H. Watkins (*Proc. Mayo Clin.*, 1942, **17**, 140) record a case of multiple diseases of the lungs treated by sulphadiazine. After the second course of this drug the patient had severe bleeding from the gums, and thrombocytopenia was detected, the platelets numbering on one occasion only 20,000 per c.mm. The value for Hb was 10.5 g. per 100 c.cm. of blood. The drug was discontinued, and improvement resulted from a transfusion. Four weeks after this the patient had to be given sulphadiazine again, and thrombocytopenia recurred. The authors urge that thrombocytopenia as the result of sulphonamide therapy should always be suspected when purpura occurs during treatment.

CERVICAL RIB AND HYPERHIDROSIS

BY

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The usual signs that a cervical rib is causing trouble are pain and muscular weakness. It is also generally recognized that in some instances there are vasospastic phenomena which may lead to gangrene of one or more fingers.

A consequence of cervical rib which is not so widely known is hyperhidrosis of the hand; the sweating here may be profuse and very troublesome. In a series of 92 patients on whom I have operated for symptoms of cervical rib there were 81 of the common textbook type. Of the remaining 11 cases, 5 were examples of pressure by a normal first rib, 4 showed predominantly vascular symptoms, while 2 patients complained mainly of profuse hyperhidrosis of the affected hand. Short notes of these two cases are as follows:

Case I

A housewife aged 38 had for some weeks felt an aching and weakness of the right hand, with very profuse sweating. She was right-handed, and her troubles were worse at the end of a day's work. When seen her right hand was normal in colour and temperature, but was covered with drops of sweat, which had saturated the bedclothes where the hand rested. Operation showed a large cervical rib articulating by a fibrocartilage with the first rib at the scalene tubercle. The accessory rib showed clearly the groove in which the lowest trunk of the plexus had rested. Removal of the rib was followed by a rapid and complete return to normal.

Case II

A probationer nurse aged 18 had been perfectly well while working as a typist, but within 6 weeks of taking up nursing she complained of increasing weakness of the right hand, with aching pain and troublesome sweating. She was right-handed, and the cause of her trouble was no doubt the change from a light sedentary occupation to one of physically much heavier work. A radiograph showed a small cervical rib on the right side. At operation this rib was found not to extend as far as the plexus, but was continued as a tense fibrous cord in the substance of the scalenus medius. The lowest trunk of the plexus rested on this cord, and it was seen that with each inspiration the cord became taut and pressed so hard on the lowest trunk that this structure was lifted up with each breath. Division of this fibrous cord, together with section of the anterior two-thirds of the scalenus medius, was followed by prompt and complete recovery.

Commentary

It would seem well-nigh certain that the explanation of these cases of hyperhidrosis of the hand is to be found in the irritation by the cervical rib of those sudomotor sympathetic fibres which are running in the lowest trunk of the brachial plexus. This explanation is in line with that generally accepted for the vascular complications of cervical rib.

Todd (1913a, 1913b) was the first to suggest that these vascular phenomena were the result of irritation of sympathetic fibres. Telford and Stopford (1931) carried his work a stage further by showing that in some individuals the vasoconstrictor fibres passed through the lowest trunk of the plexus as an undistributed bundle, and that this bundle lay directly upon the cervical rib. Given a patient with cervical rib who has this disposition of sympathetic fibres, then the symptoms caused by pressure and friction on the lowest trunk will be predominantly vascular in type. This explanation, although widely accepted, has been challenged by some writers who still believe that the vascular symptoms are to be explained by mechanical interference with the subclavian artery. Be this as it may, mechanical interference with the artery will not explain hyperhidrosis of the hand; whereas the view that the excessive sweating is the result of sympathetic stimulation dovetails very neatly with the explanation of the vascular symptoms.

Sudomotor and vasoconstrictor fibres are known to be intimately associated throughout their course and distribution, and if a leash of fibres containing both types be exposed to irritation by friction or pressure, the factor of their relative position with regard to the rib will determine whether vasospasm or hyperhidrosis figures more prominently in the clinical picture.

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DESERT SORES

BY

H. M. RAPPORT, M.R.C.S.

Captain, R.A.M.C.

The following article is in no sense intended to be authoritative or academic. It is merely a collection of views acquired after treating over 1,000 patients for desert sores.

The desert sore is a chronic ulcerative condition of the skin characterized by its tendency to local extension and delayed resolution. It appears in patches of various dimensions from the size of a threepenny-piece to that of a half-crown or occasionally even larger. The ulcers may be single or multiple; the edge is usually irregular in outline. They are roughly divisible into two main types—primary and secondary.

The primary type appears as a spontaneous blister which ruptures and leaves behind a suppurating sore. The secondary type is superimposed on any slight cut, abrasion, or burn. In this connexion it is interesting to note that the skin is far more susceptible to injury in the climate of the desert. The minimum amount of trauma will invariably result in a breach of the skin surface. A not uncommon origin for a desert sore is a simple boil which ruptures and then fails to resolve. Lastly, bites due to fleas, bugs, and mosquitoes occasionally suppurate and give rise to the desert sore.

Aetiology

The aetiology appears somewhat obscure, but certain factors without doubt tend to promote the condition. When the diet is seriously lacking in fresh green vegetables or the equivalents, I have noted a marked rise in the number of sores seen. The adequate provision of a comprehensive scale of rations naturally presents many difficulties in countries such as the Western Desert, where, on the whole, the rations are exceptionally good; but now and again essentials are lacking.

Patients tend to ignore their sores and leave them uncovered in the early stages. As a result, flies, which are very prevalent, tend to spread the condition. In the same way, the contact of sand with the sores tends to make them worse. When water is short, and washing as a result is on a very primitive scale, I find that the impregnation of dirt in the skin will often give rise to blisters, which subsequently become desert sores. General ill-health is usually associated with a profusion of desert sores, but in this connexion I find it difficult to differentiate between cause and effect. Very very occasionally when cases show rapid deterioration I have swabbed the sores, and the Klebs-Loeffler bacillus has been found. In my series of 1,000 cases 2 proved to be due to diphtheritic infection.

The condition is almost universal among the troops in the desert, but I find that newcomers are especially susceptible. The fair-skinned men seem to show the greatest susceptibility. An interesting feature is the presence of sores among the Egyptian and Libyan natives, several of whom I have treated. Their response to treatment is no better than that of our troops.

The lesions are, in my experience, seen chiefly on the extremities, and by far the commonest site is the hand. The actual sores are difficult to classify, but I recognize four stages:

(*a*) A small shallow ulcer with yellow base. The edges are not inverted, but there is a distinct tendency to undermining of the edges of the skin in close proximity to the sore, where pus forms, and eventually the ulcer elongates along these new channels. At this stage the sores are usually painful and tender.

(*b*) The sore has reached the indolent stage. It fluctuates between partial resolution and extension, and is now usually almost painless. Pus continuously exudes from the lesion.

(*c*) At this stage the sore becomes flush with the surface of the skin, with exuberant granulations, a dry scab forms, and

the condition seems almost resolved. Then from one corner of the scab pus appears; the scab loosens and is eventually shed, and the base of the ulcer is once again a suppurating sore.

(*d*) Eventually in a shorter or longer time, which may vary from one week to six months, the sore heals and leaves a permanent purplish-blue scar.

Any of the sores may pass through one or more of these stages, but may remain for an indefinite period in stage *b*.

Treatment

The treatment from the point of view of prophylaxis is naturally the provision of a diet which is comprehensive in all essential material constituents, especially vitamin C. In the Army, ascorbic-acid tablets can be issued on medical recommendation at the scale of one 25-mg. tablet per man daily when the ration is considered to be deficient in vitamin C. This amount of ascorbic acid I prescribe in every case. All cuts and abrasions should be covered in the first instance to prevent access of flies and sand. Sanitation in the field must be of the highest possible order to reduce the fly menace to the minimum.

The general treatment consists in allowing the severe cases to rest from work entirely in the first instance. This may be impracticable, but an attempt should be made to release patients from all but the most essential duties. I find ascorbic acid in larger doses—1 tablet of ascorbic acid (25 mg.) t.d.s.—of considerable advantage. Where it has been possible to obtain tablets containing all vitamins these have been far more effective. When after several weeks of intensive local and general treatment patients fail to respond, or even show signs of marked deterioration, they have to be evacuated to the base hospital as there is no chance of recovery in the field. Local treatment in my experience has resolved itself largely into the question of "trial and error." Its effectiveness varies from one individual to the next. An agent which effects a rapid cure in one patient may exacerbate the condition in another, and vice versa.

After experimenting with many pastes, ointments, and powders I have found the following agents to be most generally effective:

(i) Powdered suphapyridine incorporated into paraffin. molle flav. (three 0.5 g. tablets of sulphapyridine to 2 oz. of paraffin. molle flav.). This is applied locally and the dressing renewed after three days. I have tried in a few cases scrubbing the sores with a nail-brush and applying elastoplast over the sore with sulphapyridine paste in direct contact with the sore; the process is painful and has, in my opinion, little advantage over that first mentioned.

(ii) Powdered sulphapyridine applied alone to the sore is sometimes effective, especially in stage *b*.

(iii) Lotio eusol is often helpful in those cases which only partially respond to (i). It often increases susceptibility to treatment with (i) if the patient has applications of eusol for a few days in between treatment with (i). Acriflavine 1 in 1,000 concentration is also in the same way sometimes effective.

(iv) Patients in stage *c* often respond well to pasta flava (pulv. hyd. oxid. flav. 3 parts, pasta zinci oxid. co. 97 parts).

I make it a practice never to persist in the application of any one agent longer than 2 weeks, as the sores seem to acquire a tolerance to it after a while. If a temporary change of agent is adopted for a few days I find that on resumption of the original agent its effectiveness is often increased. This tolerance to a particular agent is a very real one, and when the agent is persisted in I have frequently seen rapid deterioration. The advisability of "ringing the changes" must be carefully considered in cases not showing response to a particular treatment. In the treatment of all sores it is essential that they be completely covered to ensure freedom from contamination with extraneous matter. In the case of the fingers I find the application of splints a great aid to resolution and a distinct deterrent to chronicity.

Illustrative Cases

I have chosen 4 brief case histories which illustrate certain points I have previously mentioned:

Case 1.—A major aged 27, fair-skinned, seen first with five small sores on the fingers. Treatment was given as outlined earlier in this paper, and while some sores resolved, others remained weeping with no tendency to resolution. At the same time numerous new sores were appearing. After 15 weeks' treatment we reached a large town where diet was both liberal and varied. All his sores disappeared in 5 days.

Case 2.—A captain aged 37, dark-skinned; slow response to treatment. He went on leave to base, where he acquired tab. multivite (B.D.H.), which he took in a dose of 1 tablet thrice daily. He returned one week later with all his sores healed, and he has had none since.

Case 3.—A lieut.-colonel aged 43, medium complexion, had numerous desert sores which were very resistant to treatment until pasta flava was tried; these rapidly cleared up after three applications. In his case other agents tried caused exacerbation of the condition.

Case 4.—A quartermaster-sergeant aged 28, fair-skinned, seen first with numerous desert sores and widespread furunculosis. All treatment failed and his general condition made removal to hospital essential. He took 3 days to reach base hospital, and on arrival his lesions had entirely healed!

Conclusions

The condition of desert sores is one to which people normally domiciled in a temperate climate are very susceptible while living in the desert. Added to this is the difficulty of maintaining the diet on a basis comprehensive enough to ensure adequate amounts of essential foods and vitamins. Finally, the conditions attendant upon active service render adequate treatment difficult and the follow-up of patients is of a standard which compares unfavourably with what one might desire.

Medical Memoranda

An Obscure Cause of Haematemesis

A fatal case of haematemesis due to ingestion of foreign bodies seems worth recording, in virtue not of the nature of those bodies but of their location at necropsy.

CASE REPORT

An undersized and under-developed girl aged 16½ was admitted to the Worcester Royal Infirmary on July 29, 1941, having been ill for 5 days with pain in the lower part of her back severe enough to keep her in bed. It was noticed that she showed a morbid interest in her complaint. There was a history of pyelitis some years previously. On admission she was vomiting green fluid and there was tenderness in the left lumbar region of the abdomen; the urine was, however, without obvious abnormality. The temperature was 100.6° and the pulse rate 96. A tentative diagnosis of perinephric abscess was made and conservative treatment initiated. Thirty-six hours after admission the patient suddenly became restless and complained of thirst; she shortly afterwards started vomiting blood, some 20 oz. being lost over a period of several hours. In spite of restorative measures she deteriorated rapidly and died 5 hours later.

At the post-mortem examination, held 24 hours afterwards, the stomach was found to be distended with recent blood-clot, but there was no evidence of either gastritis or gastric ulcer. The spleen was normal in appearance. The pancreas was much enlarged, and on opening it a haematoma the size of an orange was seen to occupy most of the head and body of the organ. This haematoma showed organization at the periphery, but in one point there was a commencing abscess cavity. A sharp object was accidentally located in the haematoma; this proved to be a sewing-needle. On further exploration two other needles were found, half the eye of one of them being missing. The duodenum was then opened, and at the junction of the middle and distal thirds on the mesial wall an ulcer was found in direct communication with the pancreatic haematoma; it was rounded and admitted the tip of the little finger; the edges were injected, but the walls were not indurated. On opening the splenic artery a small haematoma was seen in its wall. This artery had apparently been penetrated by one or other of the needles, thus giving rise to the fatal haemorrhage, for the artery had presumably bled into the intrapancreatic haematoma already present, and the haematemesis was due to the passage of blood through the perforation of the duodenum into the stomach. On opening the intestines a fourth needle was encountered at the hepatic end of the transverse colon; it was embedded in the substance of the transverse mesocolon close to the bowel wall. This needle had presumably perforated

the duodenum, travelling to its destination in the substance of the transverse mesocolon, the alternative and less probable route being through the small intestine and ascending colon with perforation of the large gut at the site where it was found.

COMMENTARY

References in the literature to the site of foreign bodies in the respiratory and intestinal tracts at various intervals after ingestion gave only one example of a foreign body having perforated a hollow viscus to enter another organ. Prof. Ameline (1937) instances a woman aged 68 who accidentally swallowed a glass-headed pin. She was admitted to hospital 7 days later. There were no physical signs in the abdomen and no symptoms except a subjective sensation of the pin having become lodged in the stomach. Repeated radiographs confirmed that the pin had perforated the posterior gastric wall. Fifteen days after the accident gastrostomy was performed. The pin was found embedded in the posterior wall of the stomach, the point being fixed in the pancreas. It was removed and the patient recovered.

In our case a history was obtained of the girl having previously swallowed other foreign bodies, but we could not get any information about the needles which caused her death.

Of 17 cases recorded—1 by Ameline (1937), 1 by Kennedy (1935), and 15 by Jackson and Jackson (1936)—of ingestion of pins and needles, 9 were found in the bronchi, 2 in the pharynx, and 4 in the oesophagus, while the remaining 2 were in the stomach.

The interesting features of this case are: the absence of any history of having swallowed foreign bodies, with resulting difficulty in diagnosis; the penetration of the pancreas, with expansion of the pancreatic tissue around the haematoma; and the perforation of the splenic artery, with subsequent aneurysmal rupture and fatal haemorrhage.

I am indebted to Mr. T. Bates for permission to publish this case, and to Dr. W. H. McMenemey, who performed the post-mortem examination, for his very kind help and criticism.

Nottingham. MURIEL BANNISTER, M.B.

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Diverticulum of the Jejunum

H. C. Edwards, in his *Diverticula and Diverticulitis of the Intestine* (Bristol, 1939), says that jejunal diverticula give rise to two main symptoms: (1) vague abdominal discomfort and sometimes pain, particularly after meals; (2) flatulence, sometimes very pronounced and associated with loud borborygmi. The condition is uncommon. Edwards found it only 9 times in 2,820 necropsies at King's College Hospital—an incidence of 0.31%. As this condition is unusual and presents difficulty in diagnosis, the description of a case in which dyspepsia with pain thought to be due to a duodenal ulcer was eventually proved to be due to a large jejunal diverticulum should be instructive.

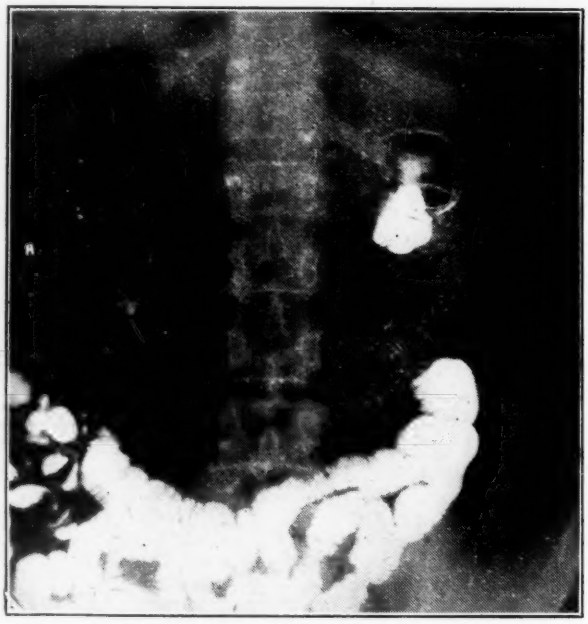

FIG. 1.—Showing barium filling the diverticulum of the jejunum 3 hours after injection of barium.

CASE REPORT

The patient, a married woman aged 56, had for more than 14 years complained of attacks of abdominal pain accompanied by much flatulence. In 1924 she had had a left nephrotomy for a large renal calculus; the history about this time is somewhat confused by the renal pain. From 1926 onwards the attacks of upper abdominal pain accompanied by much flatulence, which was relieved by bringing up gas and also by taking food, were well defined. In 1926 a laparotomy was performed after a diagnosis of duodenal ulcer had been made; but no ulcer was found, and the gall-bladder was normal. As a result of these findings, from 1926 until 1939 the attacks were treated symptomatically on the assumption that they were largely due to nervous dyspepsia.

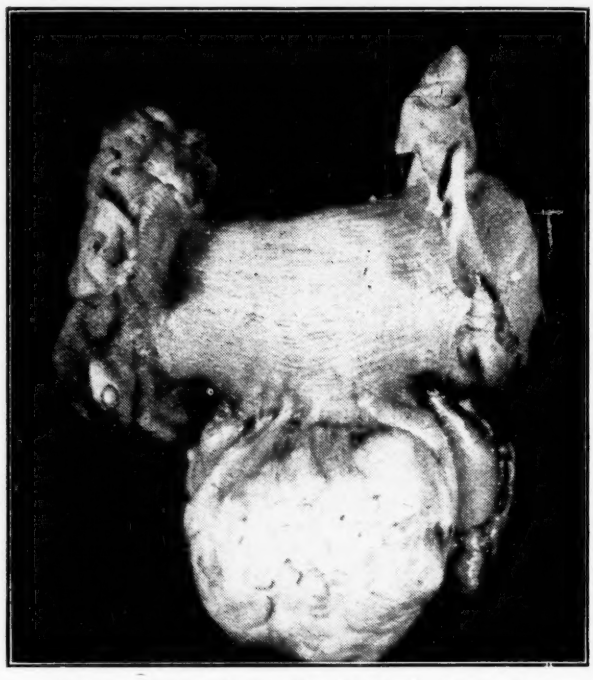

FIG. 2.—The specimen. The diverticulum is on the mesenteric border.

In Nov., 1939, after a particularly severe attack, a new radiological examination was made. Previous *x*-ray examinations of the stomach, duodenum, and gall-bladder had been negative. On this occasion Dr. R. O'Donoghue demonstrated a large jejunal diverticulum (Fig. 1) 18 inches from the gastro-jejunal flexure. There were also several small diverticula in the small intestine. These emptied with the intestine, but the large diverticulum retained the barium for more than 48 hours.

The patient was an obese subject with chronic bronchitis, and the operation had to be postponed owing to her developing bronchopneumonia. After suitable convalescence, laparotomy was performed under local anaesthesia on April 10, 1940. In spite of the many adhesions from the previous laparotomy, the diverticulum, which was on the mesenteric border of the intestine, extending into the mesentery, was easily located. The segment containing the diverticulum was excised and the continuity of the jejunum restored by end-to-end anastomosis, which was reinforced by a free omental graft. The patient made an uninterrupted recovery, and has remained quite free from her former symptoms. She is, in fact, better in health than at any time during the past twenty years.

Examination of the specimen (Fig. 2) showed that the diverticulum was about the size of a tangerine orange. When it was distended with water it held nearly half a pint.

F. E. C. DEVEGNEY, M.D.Geneva.
London, W. HAMILTON BAILEY, F.R.C.S.

In an investigation of carbohydrate metabolism in animals reduced to a subacute state of thiamine deficiency, H. A. Harper (*J. biol. Chem.*, 1942, **142**, 239) found that, compared with normal animals, there was a decrease in the rate of absorption of glucose from the intestine. There was also a decrease in the extent of hepatic glycogenesis, as well as in the rate of breakdown of glycogen.

Reviews

TREATMENT AFTER OPERATION

After-treatment. A Guide to General Practitioners, House Officers, Ward Sisters and Dressers in the Care of Patients After Operation. By H. J. B. Atkins, D.M., M.Ch., F.R.C.S. (Pp. 252; illustrated. 15s., plus 7d. postage.) Oxford: Blackwell Scientific Publications.

After-treatment is of paramount importance in determining not only the state of a patient's convalescence and subsequent health, but even his chances of survival. Such treatment is very largely in the hands of those named in the subtitle to this book and, as so much depends upon it, it should be thoroughly understood by them. The book is an excellent account of the recognized methods and should be very welcome at the present time. In addition to the after-treatment of operations it includes that which should follow certain injuries, such as burns, and head injuries producing cerebral concussion or contusion, the management of which may come within the province of those for whom it is primarily intended. Appendices on "Writing Reports" and "Appearing in Court" make valuable additions which are likely to prove especially useful to house-surgeons.

In his account of the after-treatment of head injuries the author regards the revolutionary practices of the Oxford School as too experimental to merit description, but his advice to give half a grain of luminal night and morning for as long as a year after a severe head injury may be regarded by some as a measure no less experimental than any of the practices of the Oxford School. We regret his omission of the treatment of closed head injuries by continued gentle dehydration, but perhaps the most noticeable oversight is the absence of any reference to "tidal drainage" of the bladder, which has recently been shown to be a valuable advance in dealing with the paralysed bladder of spinal cord lesions.

For the most part, however, there is little to criticize. If some of the statements are rather too dogmatic to be entirely and universally acceptable—e.g., that rectal saline after "closed" resections with obstruction is unsuitable because it may aggravate paralytic distension (and there are surgeons who regard proctoclysis as a valuable part of the after-treatment of these very cases)—such dogmatism at least has its value in making clear-cut teaching for readers. The illustrations are good and sufficient in number to enliven the text, which is easily read and printed in clear type, and the whole makes an attractive volume of convenient size. We regard this as a valuable book which will meet a real demand to-day for a concise account of post-operative management. It should make a particular appeal to the practitioners, house-surgeons, and sisters who are left to tide the patient over that critical period—after the surgeon has departed.

BODY MECHANICS

Body Mechanics in Health and Disease. By Joel E. Goldthwait, M.D., F.A.C.S., Lloyd T. Brown, M.D., F.A.C.S., Loring T. Swaim, M.D., John G. Kuhns, M.D., F.A.C.S. With a chapter on the Heart and Circulation as Related to Body Mechanics, by William J. Kerr, M.D., F.A.C.P. Third edition, completely revised and reset. (Pp. 316; 121 figures. 30s.) Philadelphia, London, Montreal: J. B. Lippincott.

This book is an interesting attempt to correlate functional disorders, and even organic disease, with faulty body mechanics. The authors, four of whom are orthopaedic surgeons and one a physician, claim that different anatomical types, such as the slender and the stocky, have a differing susceptibility to disease, and that long-continued persistence in faulty body mechanics may so interfere with the normal physiology of structures and organs as eventually to cause actual organic disease. While the authors do not make any exaggerated claims that organic disease can in every case be cured by correction of mechanical faults and improvement of posture, they quote many cases in which much benefit has resulted from this, even in such conditions as long-standing gastric ulcer, gall-bladder diseases, diabetes, disseminated sclerosis, and polyarthritis. From this it seems obvious that improvement could be much greater if treatment were undertaken earlier, before organic disease was advanced or, preferably, present at all. Prevention is better than cure, and the authors put in a strong plea, with which there will be general agreement, for early detection of postural defects in childhood and their correction by remedial exercises. Treatment is considered in detail and tables are given of the exercises which have been found most useful in practice. The book is well illustrated and a comprehensive bibliography is appended.

The reviewer, who is an orthopaedic surgeon, found himself in substantial agreement with the principles and practice expressed in this book, but it should have a wider appeal to many sections of the profession, particularly perhaps to general practitioners and school medical officers, who have the opportunity of detecting early deviation from the normal, and to physicians charged with the treatment of the "chronic" medical case. It could also with advantage be read by members of the massage profession.

TROPICAL DISEASE

Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases. By Richard P. Strong, M.D., Sc.D., D.S.M., C.B. Sixth edition. (2 volumes. Pp. 1,747; 398 figures; 1 plate. £5 5s. net.) London: H. K. Lewis & Co. 1942.

In these far-travelling days the British medical man will be apt, sooner or later, to find himself in the presence of one or other of the strange diseases of subtropical and tropical lands. To whom then must he turn for help and scientific guidance? There are several textbooks, by well-known British authors, which will appeal to him, and here is one, by an American, with which he ought to be acquainted. Stitt's treatise in two volumes, which weighs like a Service rifle, is not the sort of thing to take into the field, but it contains much that will reward careful study before embarkation. There are few tropical medical subjects—and these are either quite out of the ordinary or very unimportant—which the reader will not find fully discussed.

The reader will learn that there are many anophelines which can transmit malaria, but that only a few are of any practical importance; that anophelines can fly or be carried for miles, but that it is not the long-distance record breaker that causes the real damage; that there are four malaria parasites which are accepted as species, but that *Plasmodium falciparum* is the one to beware of. The malarial diseases are still the gravest medical problem of the Tropics. Their distribution, signs and symptoms, pathology, and treatment are set out in an orderly and thorough manner. All the other diseases are discussed in a similar way. There is a reasoned presentation of the facts, supported by evidence from a host of workers on each subject. It is true that the majority of the authorities cited are American, but this is not a matter for surprise. The population of the Americas is very large, and for various reasons the number of persons there who are carrying out research along medical lines is relatively great. Further, there are many tracts of country in which tropical diseases are rife even to-day, so that many American workers have ready access to local material.

The reader of "Stitt" will learn why it is now held that the larvae of the guinea-worm, *Dracunculus medinensis*, do not penetrate the cuticle of *Cyclops* but are ingested by this crustacean, and why *Ascaris* prevalence is considered by many to be a good indicator of the local level of social hygiene. He can find much evidence which shows that yaws is syphilis, and also much which shows that it is not. He will observe that the positive Wassermann reaction, often accepted as entirely specific, is viewed with an increasing scepticism where certain tropical diseases are concerned. He may also observe that Strong finds very confusing the use of such similar names as granuloma inguinale and lymphogranuloma inguinale for two different venereal diseases, and he may well agree with him.

It is significant that Strong, in these volumes, gives a useful amount of space to the various means of prevention of disease. The advances during recent years in the methods of diagnosis and treatment have been great, and there is little doubt that future advances will be greater still. But they are unlikely to lead to a substantial diminution of disease, except in a few cases. One of the most hopeful auguries for the future is the conviction, rapidly growing among medical men, that the abolition of the causes of disease is a matter which lies within their province, and indeed constitutes one of their prime functions. Strong's revision of "Stitt" with its salutary emphasis on the best means of preventing disease is a welcome sign of the times.

Notes on Books

Three volumes of the Oxford Medical Outline Series, on *Abdominal Surgery*, on *Thoracic Surgery*, and on *Surgery of the Head and Neck* respectively, have recently reached us; others of the series have also been published, while still others are in the course of preparation. The object of these volumes (American in origin) appears to be to cover in outline form the chief features of the surgery of the region considered. Developmental, anatomical, and pathological aspects are dealt with, and, as the author of one volume writes, the aim has been to arrange fundamentals in an orderly manner. A number of blank pages interleaved with the text enable the student to expand the outlines thus presented to him. Written by practising surgeons, these volumes give a modern summary of the subjects treated, and if because of their tabulated character, unrelieved by illustrations or diagrams, they make rather too rich and concentrated a diet to be readily assimilated by the general reader, they should at least be valuable as refreshers to senior medical students. They are clearly printed, well tabulated, and of convenient size. While their chief appeal will probably be to the candidate undergoing a coaching course or on the eve of his examination, the coach as well as the coached should find them helpful. The price in this country is 12s. 6d. each volume.

Preparations and Appliances

INSTRUMENTS FOR THE ANEURYSM NEEDLE TECHNIQUE

Mr. HAROLD DODD, Ch.M., F.R.C.S., surgeon to the King George Hospital, Ilford, writes:

The following instruments have been found useful for the aneurysm needle technique of ligaturing blood vessels before dividing them rather than the conventional "clip, cut, and tie," especially in gastric resections, nephrectomies, ligature of the cystic duct, the appendicular mesentery, the thyroid vessels, and for ligature and injection of varicose veins.

A Dissector-director.—Dissectors, directors, and dissector-directors are numerous, and an addition to this many-patterned class must be justified by real usefulness. The instrument illustrated (Fig. 1) is a good length, round-pointed, deeply grooved, and slightly curved at the tip. The generous channelling is its claim to distinction: this enables the aneurysm needle to be passed easily under the tissues without engaging in something below or at the sides, and particularly it permits the blade of the scissors to slide underneath for easy cutting; most directors are too shallow and narrow for this.

FIG. 1

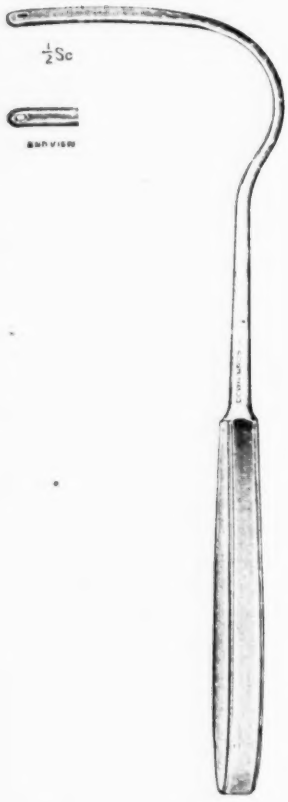

FIG. 2

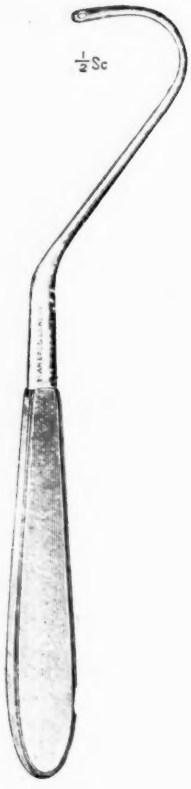

FIG. 3

An Aneurysm Needle.—The aneurysm needle shown in Fig. 2 is characterized by a long beak which enables it to carry a ligature round inaccessible pedicles like the coronary or renal artery, and then to bring it back close to the surface of the wound. Since this instrument has been made it has been found that Mr. Winsbury White had designed a somewhat similar needle for kidney operations.

A Delicate Aneurysm Needle.—This aneurysm needle (Fig. 3) is light in weight and fine in shaft and tip. It is used for passing behind delicate leashes of vessels behind the duodenum.

"Seeking Forceps."—These seeking forceps (Fig. 4) are invaluable for defining the delicate vessels encountered behind the duodenum and about the thyroid gland.

The four instruments described above are made by Messrs. Down Bros.

A Light-weight Needle-holder.—The needle-holder shown in Fig. 5 has been found suitable for the dainty suturing required in plastic operations on the skin, on the kidney pelvis in the child, on the common bile duct, and for nerve and tendon suture. It is characterized by a certain grip of the finest needles, and its agreeably light yet dependable spring. It has an attractive bend of the handles which fits them snugly into the palm of the hand. The way in which it is held is illustrated. It will be found strange at first, but comfortable and efficient after practice. It was made first by Messrs. Vann Bros.

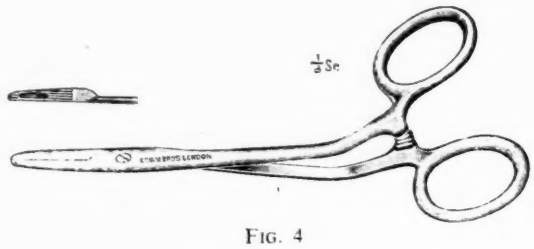

FIG. 4

FIG. 5

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY JULY 25 1942

SOCIAL MEDICINE

As was announced last week, it has been decided to establish at Oxford an Institute of Social Medicine and to appoint a professor to be in charge of it. The purposes of the Institute have been set forth as follows:

> To investigate the influence of social, genetic, environmental, and domestic factors on the incidence of human disease and disability.
>
> To seek and promote measures, other than those usually employed in the practice of remedial medicine, for the protection of the individual and of the community against such forces as interfere with the full development and maintenance of man's mental and physical capacity.
>
> If required by the University to do so, to make provision in the Institute for the instruction in Social Medicine of students and practitioners of medicine approved by the Board of the Faculty of Medicine in the University of Oxford.

With the warm approval of Lord Nuffield, the Nuffield Provincial Hospitals Trust has decided to devote £10,000 a year of its income for the next 10 years to the creation of a Professorship of Social Medicine and to the foundation of the Institute in which he will work. The Institute will be managed by an administrative committee on which the Trust will be directly represented by six members. Those who read Sir Farquhar Buzzard's paper in the *Journal* of June 6 probably guessed that this was by no means an arm-chair essay, and that one sentence in particular presaged a new departure in a university which can no longer with justification be described as a "home of lost causes." The sentence was: "We still await the establishment of the first chair and the first department of social medicine in this country."

The broad idea of "social medicine" is of course not new, and it may be interesting to recall here the proposal made in 1908 that the B.M.A. should form a Section of Medical Sociology as one of the Sections of its Annual Meetings. The promoter of this was the late Dr. E. R. Fothergill. Supporting him was Dr. Alfred Cox, then representing Consett, Gateshead, and subsequently Medical Secretary of the Association, and happily still alive and active. Dr. Cox's words, as reported, are strangely apposite now, 34 years later. "If there was one thing," he said, "more apparent than another in the present day, it was the vast interest that the State was taking in the affairs of the every-day citizen, and it was quite certain that much proposed legislation could not be carried out without the assistance of the profession." It is interesting, too, to recall that one representative wanted to know whether "Sociology" meant "Socialism."

The move now made by Oxford is the end-point of a series of reactions that have been taking place in the medical test-tube for some time now. And it is also the beginning of a new series of reactions the end of which it is difficult to foresee. That the change has been heralded by one who has had a distinguished career in clinical medicine is itself significant. This imaginative move has not had its origin in the public health service or in the Government Department officially concerned with "health." It has as its common origin an ancient university and a wealthy industrialist. This, too, is significant. The new Institute of Social Medicine will incorporate in itself much that was inchoate in the minds of practising doctors, and will become the focus of the aspirations of those far-seeing medical men who have for long realized that the stethoscope, the bottle of medicine, and the scalpel represent in essence the failure of Medicine to get to the roots of illness. Sociologists have themselves often been criticized for neglecting the individual and concentrating too much and too long on the group and on mass reactions of human beings. Medical men have perhaps erred in the opposite direction by giving too exclusive an attention to the individual patient. But Medicine has, we believe, set about its task in the right way—the way of the biologist who must observe, collect, and classify. There is a regrettable tendency nowadays to belittle the clinician. Yet it is because the clinician has for centuries kept to the fundamental scientific discipline of observing and, where possible, measuring, that facts are now available to be observed in their interrelations by the statistician and the epidemiologist. And let it not be forgotten that the sanitarian and the epidemiologist are helpless without the clinician to recognize the disease in the first place, and the laboratory worker to confirm and refine the diagnosis in the second. The clinician must himself now learn to see health and disease through the eyes of the public health worker, must see the sick person as a unit in society worked upon by a multiplicity of physical and psychological circumstances. He must become more aware of the lesson stressed at Peckham—that the family is the health unit. All this will not happen to-day or even to-morrow, for the change in medical thought that is taking place and seeking expression in action does not find a medical profession educated to take the fullest possible part in "Social Medicine." Nor is the curriculum yet planned so to mould the medical student's mind that it will adapt itself to the new medical world that is slowly taking shape. We may even wonder whether enough of those who teach the student have minds elastic enough to stretch to new conceptions.

In a leading article entitled "Social Factors in Medicine" last year[1] we observed that few individual men had had more influence on the public health movement in the 19th century than John Snow, and that he had been "less concerned with propaganda than with proving by scientific inquiry that cholera was a water-borne disease." There is always the danger that doctors will approach medico-social issues with propagandist aims that are not strictly medical in origin. There is, too, the danger that doctors will go still further in usurping the place of the priest in society through a flush of humanitarian feeling, and that the medical profession will return to its beginnings in the temples of Aesculapius. It is the men like John Snow, who in their professional life stick close to fact and inquiry, that bring about the big changes that make for social betterment—an end which every good doctor must wish for.

TUBERCULIN PATCH TEST

The intradermal injection of tuberculin, as used in the Mantoux test, has provided much valuable information on the incidence of tuberculosis in large groups of people; its value to the practitioner is perhaps not as widely recognized as it merits. The basal data are available in the classic investigation by D'Arcy Hart.[2] He tested 1,030 clinically tuberculous patients with the routine Mantoux dose, 0.1 c.cm. of 1 in 1,000 old tuberculin, and obtained 96% of positive reactions. Among the clinically non-tuberculous at early

1 *British Medical Journal*, 1941, 1, 715.
2 Med. Res. Cncl. Spec. Rep. Ser., 164, 1932, London.

ages the readings were mostly negative: 93.5% negative among 121 children aged 0–2, 83% among 124 aged 3–5, and 69.5% among 245 aged 6–10. The Mantoux result is clearly of much significance at early ages. Furculow,[3] in a valuable study in the U.S.A., used the "purest" tuberculin available, the Seibert P.P.D., and obtained the same type of result: 99% of 468 adults with clinical tuberculosis gave a positive Mantoux result, while less than 10% of 309 young people aged 6–9, with no clinical signs or known history of contact with tuberculosis, gave a positive reading. Bradshaw[4] feels that the diagnostic value of the test is underrated. At the Great Ormond Street Children's Hospital between 1934 and 1938 he tested 3,010 children referred by the clinicians: in 748 the test was positive. One important point was that in the examination of "wasters, contacts, adenitis and arthritis suspects" the test enabled three-quarters of the "suspects" under 4 to be cleared of suspicion of tuberculous infection; even in the 10–12 group half could be cleared. Bradshaw regarded the test as not devoid of some risk of reaction in erythema nodosum and phlyctenular conjunctivitis. In adult life the test is not so generally useful, for few who live in cities escape contact with the tubercle bacillus. Most recover but thereafter give a positive Mantoux response. Of 134 clinically non-tuberculous adults tested by D'Arcy Hart 88% were positive to the routine Mantoux dose. The positive percentage differs in different populations, and with the decreasing incidence of tuberculosis up to the beginning of the war the Mantoux rate was probably falling. New York City in 1921–8 showed a positive rate for age group 12–13 of 45.5%, whereas in 1934 the rate had dropped to 35.2. If the incidence of tuberculosis in the general population is low, adults who are negative to the Mantoux test will be more numerous and a negative Mantoux response will be of significant help to the physician, as was pointed out by M. P. Crowe.[5] Together with a low erythrocyte sedimentation rate it will justify a reasonably confident decision that baffling symptoms in a patient are not due to an active tuberculous infection.

Invaluable as the intradermal test is, the method has drawbacks. The dilution of tuberculin to be used will keep for only a short time; the needle prick, though not bothering adults, may cause tears in children; finally, tuberculin adheres so tenaciously to glass that a special syringe must be kept for the test, and indeed for each dilution. In the presence of suggestive symptoms the medical man cannot accept a negative Mantoux result, but must know if his patient falls in the extra group of 7% inculpated by tests with the stronger dilutions 1 in 100 and 1 in 10. In order to avoid some of these difficulties Grozin[6] in 1933 let fall a few drops of tuberculin on to adhesive plaster, which was then applied to the skin of the patient. He called the method "the patch test." Vollmer[7] improved it by saturating filter paper with undiluted tuberculin, drying it, and attaching it to the adhesive side of the plaster. He has devoted much attention to the test, and has reported[8] on 2,900 patients, of whom approximately 720 were tuberculous. In 98% the results of the Mantoux and patch tests agreed. A number of recent papers, notably in America and Australia, testify to wide interest in the patch test. Reismann and Grozin[9] in New York State examined 1,000 patients by the Mantoux and the patch method: 49 were positive to both tests, 3 responded only to the Mantoux, and 2 to the patch test only. Furculow tested 612 patients aged 6–19: 123 were positive to the Mantoux test. The patch test missed 6.7% detected by the Mantoux test, and in 7.4% gave a positive where the Mantoux test failed. Though a few writers have described much larger discrepancies,[10] the majority of reports indicate that the patch test will give the right answer in about 95% to 98% of young patients. It appears to be less trustworthy in adults, for whom the Mantoux test seems preferable.

In descriptions of discrepancies many points of interest have been noted. All tests of the kind have a basal small error. Even when the same dose was injected from the same syringe intracutaneously into the two arms of the same patient, the results in the two arms differed in 3%. Different brands of tuberculin have given different percentages in tests on the same patient. Savage[11] in the U.S.A. recorded 60% and 47.6% in duplicate Mantoux tests with two commercial tuberculins. Even two small pieces of filter paper under the adhesive plaster at adjoining spots have on rare occasions given one a positive and the other a negative reading. Error has arisen from the application of the patch to skin that has been exposed to much sun and wind, or from failure to remove all grease from the skin with ether, acetone, or benzene before applying the patch. Again, different workers have used different tuberculins, O.T. or P.P.D. Colebatch[12] has also described false negatives due to the deterioration of patches during transit. When all these points are borne in mind, and when the practitioner can be satisfied that he has at his disposal a standardized uniform "patch," the test will probably prove of considerable value to anyone who is impelled by the exigencies of practice to sacrifice the greater accuracy of the Mantoux test to the convenience of the patch test. While a positive reading may be accepted, it is wise to accept a negative one only provisionally, subject to the result of a Mantoux test with the second dose, 0.1 c.cm. of 1 in 100 tuberculin. If the Mantoux test is not being as much used in general practice as it should be—and evidence points that way—the use of a properly standardized patch will be preferable to no test at all.

DIARRHOEA AND VOMITING

The fact that the "peak" occurrence of diarrhoea in the summer months presents nothing like the tragic problem of twenty-five years ago has perhaps led to some neglect of the study of the curious relation between hot weather and this alarming metabolic disturbance of the young. It is commonly taught that summer diarrhoea has been abolished because of three main factors: the educational work of the infant welfare centre, the increased use of dried milk, and the disappearance of manure-covered streets with the advent of the motor car. These factors all presuppose an infective origin of the condition, but it was never clearly established that even the minority of cases were due to recognized pathogenic organisms. Recent work has suggested that a virus ought to be considered, but the fact that diarrhoea still occurs more frequently in warm weather, despite all the improvements in hygiene, suggests that heat might act in some ways other than by favouring the growth and distribution of some infective agents. Just before the war R. M. Campbell and A. A. Cunningham[13] studied a group of 574 infants with diarrhoea and vomiting admitted to the Park Hospital, London County Council. Grouping the cases by the month of the onset of symptoms, they found the largest number of cases to occur in July and September, and the

3 *Publ. Hlth. Rep.*, Wash., 1941, **56**, 2405.
4 *British Medical Journal*, 1939, **1**, 825.
5 Ibid., 1942, **1**, 266.
6 *Amer. J. Dis. Child.*, 1933, **46**, 17.
7 Ibid., 1937, **54**, 1019.
8 *J. Pediat.*, 1940, **16**, 627.
9 *Amer. J. Dis. Child.*, 1941, **62**, 1197.
10 *Amer. Rev. Tuberc.*, 1941, **44**, 94.
11 Ibid., 1941, **43**, 527.
12 *Med. J. Austral.*, 1941, **2**, 640.
13 *Arch. Dis. Childh.*, 1941, **16**, 211.

smallest in January. More than half the cases admitted had occurred in the five months June to October. As gastro-enteritis may be a disease of mixed causations, it might be thought that the seasonal incidence of any series of cases would be the result of the interplay of a variety of infections of different epidemic constitutions. All cases without any evidence of parenteral infection (bronchitis, pneumonia, otitis, urinary infections, and so forth) early in the illness were analysed in the same way for monthly incidence, but the results were essentially the same, and the warmer months yielded an undue proportion of cases. Of the whole series there was evidence on admission of parenteral infection in less than one-third of the total number, and, taking the series as a whole, parenteral infection had no apparent effect upon the general death rate, which was 27.7% for the whole series. A distinction between dehydrated and non-dehydrated cases not only indicates the chief danger of diarrhoea and vomiting for the young but gives the clue to treatment and perhaps to causation. The mortality for the dehydrated group was 53.7% and for the non-dehydrated only 2.4%. It is small wonder that the authors summarize therapy by stating, "Whilst the general nursing management must be of a high order . . . the most important single factor in treatment is the relief of dehydration." For dealing with dehydration the authors favour the continuous subcutaneous route, ringing the changes on normal saline, Ringer's solution, and 3% glucose in 0.25% saline. In seriously ill patients this is supplemented in the first twenty-four hours by intraperitoneal and intravenous therapy. The profound disturbance in cellular chemistry set up by a negative water balance is probably not yet sufficiently appreciated. Recent biochemical studies have shown how serious this may be, and Campbell and Cunningham promise a further paper on water and salt metabolism. Meanwhile the effect of hot weather in facilitating fluid loss might be borne in mind as a possible factor in turning a mild gastro-enteritis into a deadly biochemical disturbance. Breast-feeding as a preventive measure can once again be supported by the Park Hospital figures. In the whole series only 4.5% of the infants were breast-fed at the time of onset, and only 3 out of the 18 died. About four-fifths of the infants contracted the disease at home, and it would appear that extra fluid (plain boiled water or even weak saline) might be a useful measure of prophylaxis for all babies, however fed, in hot weather.

A NATIONAL AMBULANCE SERVICE

Hospital regionalization when it comes about will presumably carry with it regionalization of the ambulance service, for the ambulance, its promptitude, its equipment, and the skill of its attendants, may be as important in life-saving as the hospital bed itself. Ambulance provision is now probably, in bulk, not inadequate, but it needs co-ordination to avoid overlapping on the one hand and delay on the other and to overcome those difficulties which occasionally arise when there is doubt as to which authority is responsible for providing transport. The ambulance is now such a familiar vehicle that it is hard to believe, as we are told in a booklet issued by the Home Service Ambulance Commitee of the Joint Council of the Order of St. John and the British Red Cross Society, that before 1914 the civil population of England had practically no ambulance service. Many will remember the hand-propelled litter in charge of the police; in a provincial town of 20,000 population the other day we saw one of these in service after an accident. The last war gave a great impetus to ambulance organization, and at its end a number of people, under the auspices of the Joint Council, resolved to carry wartime experience into civil life by providing a range of ambulance stations throughout England and Wales. This Home Service Ambulance, which is by far the largest single ambulance organization, has 136 stations, and 320 others are affiliated, and last year it carried nearly 200,000 patients. In Scotland the St. Andrew's Association has over 100 ambulances, 23 of them in Glasgow. In addition there are the services of the local authorities, and London and other authorities have excellent ambulance fleets. Many hospital contributory schemes provide transport facilities for their members, many hospitals run their own ambulances, and, finally, there is the A.R.P. service, largely of improvised vehicles. The need for an adequate regional and divisional organization of standard vehicles and stretchers is apparent. Standardization is important if there is to be free interchange. In its 23rd annual report the Home Service Ambulance Committee points out that ambulances accommodating only a 6-ft. stretcher will be a great disadvantage in a widespread post-war interhospital scheme, and urges all ambulance builders, looking to the future, to build or modify their vehicles to accommodate the 7 ft. 9 in. stretcher. No doubt also the term "ambulance" will increasingly connote first aid as well as transport, and at convenient centres in each region there will be a first-aid ambulance unit with resuscitation and blood-transfusion apparatus. The committee already maintains such units in large industrial and in certain coastal and mining areas. In the recasting of the hospital system of the country a well-coordinated ambulance provision will not be the least of the essentials.

"LEKARZ WOJSKOWY"

Just one year ago the Polish Army Medical Corps published the first number of its journal, *Lekarz Wojskowy*, in this country. We have recently received the February-March-April issue for this year, and it bears adequate testimony to the energy of the editor and to the skill and knowledge of the contributors to what is, in these days, quite a substantial number. There are, for example, articles by Dr. Bohdan Hejduk on the organization of field surgery in modern war; by Prof. Antoni Jurasz, who is Dean of the Polish Medical School in Edinburgh, on considerations on surgical shock; by Dr. J. Skladal on the principles of physical diagnosis of latent and preclinical lesions of the lungs; and by Dr. A. Fidler on the theory of true uraemia. There is, too, a report of the congress of the Polish and Czechoslovak doctors held in Edinburgh in September of last year. Most of the articles are in Polish, but there are good summaries in English which will enable the English reader to get some idea of the work and views of the doctors of the great Slav nation which has been our close ally since September, 1939.

DOCUMENTARY REPRODUCTION

Micro-film processes for automatically recording documents have received much attention, particularly in America, during the last 5 or 8 years, and now in this country they have come into prominence through the risk of destruction of original documents by enemy action. Legal and banking documents are now being copied regularly and conveniently by the camera, and libraries are making large use of the facilities offered by the new developments in photographic technique. Much of this work is done with miniature cameras, often by 35-mm. cinematograph cameras taking pictures 18×24 mm. A thousand pages can be recorded in this way on a film spool measuring $3\frac{1}{2} \times 1\frac{1}{4}$ in. Sixteen pages of a scientific paper, for example, will go on one foot of film. As for the time taken by micro-film copying, we learn that in Bermondsey 500 folios of parish registers were recently photographed

in a few hours, a work which, if undertaken by hand, would have occupied months. The recording apparatus is a camera embodying a lens system giving high-quality definition over a wide field of view. The viewing or projecting apparatus is of different kinds. A hand viewer is necessary for the rapid recognition of titles of documents; this needs a lens magnifying perhaps no more than seven times. Then there should be a table viewer for reading the image while the reader sits with an illuminant so arranged that the room need not be in complete darkness; here the magnification may be twenty times. Another form of viewer may be used for projecting the image over a typist's shoulder on to a small screen when the document has to be recopied. The difficulty has been hitherto the expensiveness and complication of much of this apparatus. Recently Mr. B. K. Johnson, a teacher at the Imperial College of Science, showed to the Optical Group of the Physical Society a range of simple instruments constructed by him, which, we understand, are about to be manufactured by a commercial firm. The camera in the recording apparatus can be used at a low aperture, such as F/8, but the average grain size of the film now produced is just about equal to the resolving power of a camera lens working at the wider aperture of F/4.5. Part of the simplicity of Mr. Johnson's devices is due to the realization that most of the documents to be copied are of quarto or at least not larger than foolscap size, so that, accepting this limitation, one can do away with any automatic mechanism for moving the camera lens. A device is incorporated for moving the film along for the correct distance for each exposure. A different plan is pursued at the National Institute of Medical Research, which has been interesting itself in the micro-film process for recording papers from journals for storage in its library. Here it has been found that for simplicity of working a small repeating back camera, using flat film, is preferable to an arrangement for the use of roll film, with its gates and sprockets; the flat film is moved by a small lever. These methods of documentary reproduction are still in the stage of infancy, and the future will no doubt see great developments. The recent introduction of a new sensitive material (micro-negative copying film, panchromatic) is a further step towards the accurate registering of minute detail. With modern high-resolution films it is by no means impossible to copy a page of a daily newspaper containing small advertisements in such a way that every word is clearly readable; this is customarily done with the double frame size of picture measuring 24 × 36 mm. It may be added that micro-film is now being largely used also for taking enlarged photographs of microscopical preparations at low magnification.

TOWARDS THE CLEAN CITY

In the vast dreamland of social reconstruction, the contours of which are only dimly seen, all sorts of movements, admirable and less admirable, are staking out their claims, and they are right to do so because, in spite of the indeterminate nature of the ground, the "concessions" will probably go to those who are there first. A body early in the field is the National Smoke Abatement Society, which has prepared a memorandum entitled *Smoke Prevention in Relation to Initial Post-war Reconstruction.* The memorandum leaves out of account long-term proposals and concerns itself only with the ways in which smoke can be prevented in the new buildings which will begin to arise all over the country when the war is over. So far as these are commercial buildings, it is thought that by requiring all new installations of fuel-burning equipment to receive approval of a special authority, by banning open fires, and by making obligatory the use of smokeless fuel, a clean atmosphere could be achieved in the blocks of shops and offices which make up the centre of a modern city. For industrial plant there must be control of new installations and in many cases also of use and maintenance. It is the multitude of domestic chimneys which will always be the difficulty. But here again the construction of new houses depending entirely upon gas and electricity might be encouraged, and even though one open fire per house be conceded, the grates can be so designed as to use smokeless fuel. The memorandum urges that there should be smokeless central zones in cities, so that the shopping and promenade streets and the central parks and gardens may be pleasant, cleanly places instead of places of greyness and grime as they are now. Indeed, there might come about a state of affairs in which the central part of a great city, instead of enjoying only half the amount of sunlight which is the portion of the outer suburbs, would be brighter and sunnier than they. The same society has issued a pamphlet entitled *No Clean City,* in which smoke is shown, by telling quotations and still more telling photographs, to be the enemy of health and amenity. We notice one quotation by the M.O.H. for Manchester: "The abolition of smoke from our midst would do as much for the improvement of public and individual health in our industrial centres as any other single action open to this country."

PHOTOGRAPHING ANTIBODY ACTION

There is much in microbiology which can only be deduced, since it cannot be seen, and the limits of what can be achieved by direct observation were thought to have been reached when Barnard perfected photography by ultra-violet light. A long step further has been taken by the introduction of the electron microscope, and the possible uses of this instrument in biology are now beginning to be explored. Some idea of what it may achieve can be gained from a paper by S. Mudd and T. F. Anderson,[1] which is illustrated by photographs showing the action of antiserum on bacteria. They were taken at a magnification of 8,000 diameters and printed at one of 25,000. These sensational pictures show monstrous bacilli with long and exceedingly fine flagella. Their first usefulness is, indeed, in showing that flagella are much thinner than stained preparations would lead anyone to believe, the estimated thickness of a flagellum of *Bact. typhosum*, for instance, being only about 290 A.U. Admixture with homologous serum—heterologous having no such effect—causes both changes in the bacterial cell wall and a measurable increase in the thickness of the flagellum, attributable to deposition of antibody molecules on its surface. It is known that the antibody globulin molecule is elongate, and from its known dimensions and the measurements here made it could be concluded that the molecule was lying flat on the surface of the flagellum. By deduction not only from these observations but from work by others these authors conclude tentatively that in a low concentration of antibody patchy deposition takes place with the molecule lying parallel with the surface; with somewhat higher concentrations molecules so disposed form a continuous film, but in higher concentrations still a radial disposition is assumed. Another point vividly illustrated is that flagella sensitized by antibody attract particles of other kinds. When the serum used contained a precipitate, this was adsorbed on the surface of the bacterial cell and its flagella, with the result that they are entangled in large irregular masses of granular material. But these photographs are chiefly of interest as a portent: clear pictures at such a magnification afford an almost unlimited prospect for new observations.

[1] *J. Immunol.*, 1941, **42**, 251.

SAVING COTTON-WOOL AND USING SAWDUST

BY

DUNCAN C. L. FITZWILLIAMS, Ch.M., F.R.C.S.

Among the schemes brought forward by the different professions for saving shipping space, it is strange that the medical profession should have overlooked one that could be very effective. It is the saving which might be made in the use of cotton-wool. Cotton-wool is a light and therefore bulky commodity and must take up considerable space. As it is grown chiefly in America it must be imported either in the raw state or as the finished article. An enormous quantity is used in hospitals, surgical centres, surgeries, and for many purposes throughout the country.

Cotton-wool has two great qualities for which it is used in surgery. First, it diffuses the pressure of bandages, splints, and apparatus over certain areas of the body. Fat people, therefore, scarcely require any of this "padding," as their own fat carries out this function, but wont and custom dictate that we should apply rather more to them than to thin people, because they are larger and have a greater surface. Splints used to be padded with cotton-wool, but with the application of plaster to fractures this is no longer necessary; and our results are better, as the apparatus does not slip out of position, showing that it was largely custom which dictated the use of cotton-wool. Fomentations are always covered with large quantities of cotton-wool, which is thrown away when the fomentation is removed, but a folded soft towel is just as good and can be applied again and again.

The second reason for the use of cotton-wool is its absorbent qualities for septic wounds or where there is discharge, but how many septic wounds do we see to-day? If we consider why we apply huge quantities of wool over a simple appendix wound we shall find that we do so because the theatre sister hands it to us. If it must be used the quantity might well be cut down to one-quarter. The same thing could be said of nearly all clean operations.

Enormous saving could be made in the dressing of clean wounds; often the whole dressing is discarded, and a big wodge of cotton-wool applied over a new one, even when the wound is already practically healed. If there is any need for wool over a fresh wound, there can be little need for it when the wound is nearly healed. Some saving might also be made in the amount of gauze used. This saving of shipping space can only be brought about by the thoughtful co-operation of the surgeon, the assistant or house-surgeon, and the sister or nurse, chiefly the sister, as she can control the nurse and the amount the surgeon applies; but it should be remembered there is no more conservative body of people than hospital sisters. The surgeon would do well to give orders on the subject.

Dressings from Sawdust

Some time ago the B.B.C. broadcast a request for suggestions for the use of sawdust. Perhaps the following experience might prove useful, for my brother and I managed a hospital of 100 beds in Rumania during the last war for many months without any dressings at all except sawdust, and a better dressing could not be asked for. We had no surgical equipment except our pocket surgical cases and the housewife of the matron; this may sound romantic, but was nevertheless a fact. How the other needs were supplied makes interesting reading, but cannot be gone into now. I will deal only with the sawdust dressings.

We had nothing except an ambulance; the buildings and bedding were of course supplied. The shops throughout Rumania were supposed to be completely denuded of material of every kind, but it was found that material could be produced when it was learned that we belonged to the British Red Cross, and it spoke volumes for the reputation and credit of this country that we obtained what we wanted, although we had little money and could only give "chits." All the shopkeepers were Jewish, and most of their goods had been sold to the Germans before they came into the war. What was left had been commandeered, and there was little chance of their being paid for it. Small wonder, then, that we were right when we thought that there might be something hidden away if we could get at it. Through an accommodating person we bought all the linen, gauze, and muslin we wanted, and smuggled it into the ambulance.

Next a meeting of lady volunteers was called, and their help and their sewing-machines were asked for. They had nothing: we had even to supply the thread; but they were set to work to make linen or muslin bags of different sizes. The material was torn into various lengths and widths and then folded over so that only three sides needed sewing. Coarse black thread was used because it showed up against the white material. One-quarter of the last side was left unsewn and open.

Preparing the Sawdust

We arranged for cartloads of sawdust to be delivered from the saw mills, which abound throughout Rumania, and dumped on clean sheets laid on the floor of a previously cleaned shed. It was then put through a large sieve, which removed all the coarse pieces of wood mixed with it. These were thrown away, and the remainder was sifted well through moderately fine sieves; this process was repeated twice so that all the fine dust was removed. The sawdust from these mills consists partly of real fine dust and the rest is crushed wood in the proportion (speaking from memory) of about one of the former to three or four parts of the latter. It was important to remove as much dust as possible to prevent it getting into the wound, so this fine sieving was done very thoroughly twice.

What was left was a coarse granular substance consisting of crushed wood pulp torn from the interior of the tree trunks by the great broad teeth of the circular and band saws. Considering its source I should imagine that the amount of septic organisms in it was very small. This granular substance was put into the bags through a funnel, until the bag was between one-third and one-half full. The opening in the bag was then sewn up with thick coloured thread, usually red, in such a manner that when the bag had to be emptied, all we had to do was pull the knot at the beginning and the thread came out, thus restoring the opening. The bag was then shaken, turned inside out, washed and boiled, and used again.

The bags varied from about 6 in. by 4 in. for small wounds to 12 in. by 10 in. for large ones or those with much discharge like empyemata. Most of the wounds were horribly septic and discharged freely, and this coarse granular material proved to be highly absorbent. The sawdust swelled as it got wet, so that the pads were always larger when removed than when first applied; hence it was necessary that they should be only one-third to one-half full.

In our improvised hospital the bags were put in tins in the oven, and people were assured they were sterile. Whether this was true or not I do not know; they were never tested bacteriologically, but they were all we had. Layers of material, which had been sterilized by boiling, were first applied to the wounds, and then the bag of appropriate size was added, and the whole fastened in place with improvised bandages. There were no other dressings of any sort, but the hospital was filled to capacity.

I can vouch for the fact that we came to regard these dressings as almost ideal for their simplicity and effectiveness, and we only relinquished them with regret. The credit for the idea should be given to that extraordinarily inventive genius Charles Cathcart, F.R.C.S., of Edinburgh, who mentioned the possible use of sawdust in surgery in an article either in the *British Medical Journal* or the *Lancet* before the last war. I had read this article with great interest; probably it would pay others to look it up.

Since 1932 a specific dietary disease of silver foxes has been recognized as one of the important problems of the fur industry. Its pathological characteristics are similar to those of Wernicke's disease or haemorrhagic polio-encephalitis in man. In foxes the disease is called Chastek paralysis, and it first appeared among the animals on the Chastek fur farm in Minnesota, where in one month it killed one-third of the entire ranch population of more than 200 foxes. Apparently the disease appears among foxes when 10% or more of certain types of fresh whole fish are included in the ration, and it can be prevented by adding large amounts of thiamine. Necropsy reveals severe damage to the liver. The brain lesions are bilaterally symmetrical, and occur in the grey matter, especially in the paraventricular region.

Nova et Vetera

MICE IN PLAGUE PICTURES

The identity of the pestilence that destroyed upwards of 50,000 of the Philistines (I Samuel, v) has long been the subject of speculation. It was characterized by the presence of visible swellings in the body, which the translators of the Authorized Version called "emerods"—an archaic word for haemorrhoids. Clearly these scholars did not identify the epidemic as bubonic plague, else instead of the curious word "emerod" they would have used "botch" or "bubo," familiar words in their day. Most interesting, however, is the conjunction of pestilence and emerods with "mice that mar the land"; these malevolent rodents may equally well have been rats.

In a recent paper Otto Neustatter[1] recounts his study of early illustrated scriptural texts, undertaken to determine if in Europe there was any appreciation of the aetiological role of rodents in plague. From a series of such texts—beginning with a Paris MS. of 1250, and including the famous Lübeck Bible—he reproduces representations of the plague of the Philistines in which rats or mice are shown. In all these illustrations, however, the rodents are depicted as scampering round in fine fettle or preying contentedly on the corpses, and there is no indication of any mortality or sickness among them. The Biblical narrative mentions rodents, and in faithful adherence to this the artists introduced them into their pictures without any realization of their special significance. Neustatter seems to doubt the identification of this pestilence as bubonic plague. To my mind there can be no question. Bubonic plague is the only killing epidemic disease characterized by visible swellings—call them emerods or what you will.

It is interesting to consider what was known in this country of the aetiology of plague while the disease prevailed. A mortality among animals was long known to presage and accompany plague in man, but the only association believed to exist between the epizootic and the epidemic was their origin from one source common to both—namely, a plague poison fermenting in the ground. Rats are not stressed, and indeed they are often omitted from the lists of animals affected by plague. Gilbert Skene considered it very ominous when the "Moudewarp [mole] and Serpent leavis the Eird [earth] beand [being] molestit be the vapore contenit within the bowells of the samin [same]." "Serpent" in his day might mean almost any creatures that crawl, from crocodiles to bees. Bacot, who succeeded in infecting hen-fleas with plague, suggested that the occurrence of the disease in these birds would involve grave risk to man. What Bacot suggested Skene appears to have observed 400 years earlier, for he points out that this "infectioun bringis baith man and beast to death . . . and speciallie quhan [when] the Domesticall foulis becummis pestilentiale it is ane sign of maist dangerous pest to follow."

The only animal regarded in England as an active vector of plague to man was the dog, not by contracting the disease but by harbouring infection in the hair. This animal is resistant to plague, and the dog-flea, though a potential vector, in my experience does not bite man readily. On a number of occasions, however, when fleaing dogs, I have recovered from a single animal several dozen fleas not native to the dog, and effective carriers of plague. Dogs, therefore, may readily have picked up and brought home vagrant infected fleas which had abandoned their dead rat-hosts; the exertions of dog-killers in London plagues may not have been altogether misdirected.

The theory of the ferment origin of plague retained official recognition while the disease continued in England, but during the last epidemic in London in 1665 a considerable minority rejected this assumption and contended that the disease is caused by some "animated Matter' which invades the body and produces a poison there. Nathaniel Hodges set himself to investigate this new theory. In one instance only, he reported, was the presence of "animated Matter" demonstrated in a victim of plague. This patient "in vomiting threw up a strange figured Insect, which appeared very fierce, and even assaulted such as were busie to observe it, whereupon it was crushed by a rude Hand, so that its shape is not very discernible." And here ended for a long space the theory of "animated Matter" as the cause of infective disease. W. P. MACARTHUR.

[1] *Journal of the Walters Art Gallery*, 1941 4.

Reports of Societies

CHEMOTHERAPY OF INTESTINAL INFECTIONS

At a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on June 9, Dr. R. D. LAWRENCE presiding, Dr. ROBERT CRUICKSHANK opened a discussion on "The Chemotherapy of Intestinal Infections."

Dr. Cruickshank said that in this field the bacteriological cure was as important for the community as the clinical cure for the individual. Until a year ago the treatment of intestinal infections with drugs had been a complete failure. Typhoid fever was a disappearing disease, but paratyphoid had become a mild prevalent infection. Flexner dysentery was still common in certain institutions. Gastro-enteritis was still a major problem in paediatrics. The sulphonamides had raised hopes, but there were two main objections to these and other drugs: it was impossible to get much practical clue to the value of a drug from test-tube or animal experiments, and the ordinary sulphonamides were readily absorbed from the gut and did not stay to attack the organism in the bowel itself.

The great advance in this field came when Marshall and his colleagues at Baltimore discovered a drug which, while active in the test-tube, yet was not absorbed to any extent from the intestinal tract. The toxic effects of this drug, sulphaguanidine, were minimal. The standard dose with sulphaguanidine was 3 g. three times a day for three days, followed by 3 g. twice a day for a further four days, the week's course thus giving a total of 51 g. In dysentery infections more particularly it was important to give the drug in large doses at infrequent intervals. There was no evidence that sulphaguanidine was of any benefit clinically or bacteriologically in enteric fever, or that any of the sulphonamides were of value in the treatment of the chronic typhoid carrier. Another substance used in the treatment of the chronc carrier—namely, iodophthalein—had a definite bactericidal effect on the coli-typhoid group, and occasional cases of cure had been reported. Sulphaguanidine could cure the convalescent Flexner dysentery carrier and was of great value in the clinical cure of dysentery. In the milder Sonne dysentery the effects were not quite so striking. The Sonne bacillus was a much more hardy organism. In gastro-enteritis sulphaguanidine had given no response. As to ulcerative colitis, he had collected records of 10 cases treated with this drug: 2 showed complete remission after a course, 1 showed improvement, and 7 were unaffected. In dysentery the drug of choice was not emetine, but bismuth iodide and quinoxyl, and for giardiasis there was atebrin.

Sir PHILIP MANSON-BAHR said that there were about as many remedies advanced for ulcerative colitis as there were causes suggested for its aetiology. He had tried sulphaguanidine in 10 severe cases of ulcerative colitis. Given by the mouth it seemed to be no good at all, but if there was a regional ulcerative colitis which could be seen by the sigmoidoscope or radioscopy to be confined to the lower part of the sigmoid or rectum, and the drug was introduced directly on to the mucous membrane, the result might be quite favourable. The best improvement in the cases he had seen was shown in those which contained streptococci in the stools. The drug must be introduced by enema retention and in large doses (7 to 10 g. dissolved in 7 oz. of water and suspended with mucilage or gum of acacia). First of all he gave some emollient sedative like bismuth subgallate in olive oil to soothe the mucous membrane, and then gave the sulphaguanidine by rectal enema, preceded by luminal or small doses of morphine. He could record 4 cases in which there had been remissions up to date for 6 months. The drug was altogether retained, not voided. One woman had been ill for 5 years and had had blood transfusion in several London hospitals. Since treatment the stools had become normal. Her haemoglobin had gone up from 50 to 80%, and she was looking and feeling well. Of all the substances he had tried, this had given him by far the best satisfaction.

Speaking of amoebic dysentery, he said that emetine was probably the most wonderful specific in the *Pharmacopoeia*: but it had been badly abused. It had been too often assumed that, because the parasite was knocked out, the disease was

knocked out also. Formerly emetine bismuth iodide was given in far too big doses. He now gave 18 to 20 gr. in total—2 gr. at night for 10 nights—and even that was too much. The patient should be given a liberal lunch but no other food for 3½ hours before the drug was given. The giving of the drug should be preceded by luminal in two doses—1 gr. an hour before administration and 1/2 gr. half an hour before. The emetine bismuth iodide should be given in hard gelatin capsules. It had become the popular thing in the Tropics—for example, Kenya—to put everything down to amoebic dysentery and to give periodic minimal injections of emetine. If this were done, even if the case was one of amoebic dysentery, there was a danger of getting an emetine-fast organism. He concluded with a word about giardiasis. The giardia was a mildly pathogenic parasite. If it occurred in enormous numbers in the small intestine it gave rise to a mucoid diarrhoea, and if there was a massive infection a steatorrhoea made its appearance. With the drug atebrin (mepacrine hydrochloride) the specific nature of the treatment could be estimated from the fat content and appearance of the stools.

Dr. HELEN MACKAY said that in her experience of sulphaguanidine it appeared to have no effect in dealing with the severe type of enteritis, but she pointed out the value of chemotherapy in infections associated with enteritis. Until these new drugs came forward, cases of enteritis which had an associated infection, such as pneumonia, were regarded as invariably fatal, but that was no longer true.

In reply to a question Dr. CRUICKSHANK said that he believed sulphaguanidine was marketed by two drug houses in this country and that supplies were available beyond what was required for the Forces.

ULCERATIVE COLITIS

At a meeting of the Manchester Medical Society on May 6 Mr. PETER G. MCEVEDY opened a discussion on ulcerative colitis. There was, he said, much that was not known about this condition, the diagnosis being often incomplete and the death rate high. Basing his remarks on 71 cases that had been under his care in the last 5 years, he showed that, with a more complete anatomical and pathological diagnosis and more active treatment, the mortality could be greatly reduced and the number of complete cures increased. Anatomically, the disease started in the rectum, and commonly spread to involve the whole colon, but rarely the lower end of the ileum. It was an inflammation starting in the mucosa and might spread to all coats of the colon. His cases could be divided into the four groups: (1) those in which there was proctitis; (2) those in which the left half of the colon was involved; (3) those with involvement of the whole colon; (4) segmental colitis. The bowel symptoms in each group were what one would expect, and the general symptoms the results of toxaemia, loss of blood, disturbed digestion, and lack of sleep. The diagnosis must be confirmed by the proctoscope, the sigmoidoscope, and *x*-ray and bacteriological examinations. Proctoscopic examination confirmed the diagnosis in all but the segmental cases, in which radiography was essential. In the seriously ill patients bismuth enemata might be harmful and sigmoidoscopy dangerous.

The first and most important step in treatment was to confine the patient to bed, preferably on an open-air balcony. The diet should be the most nourishing that could be taken with the minimum of residue, and added vitamins. As regards operative treatment, ileostomy certainly rested the colon and the inflamed part could be removed by colectomy. Theoretically it was the ideal treatment; but mortality was high and the patient with a permanent ileostomy was not in a happy state. The operation should be reserved for complications, such as strictures and polyposis, and for cases that were obviously failing to answer to less drastic forms of treatment. In Mr. McEvedy's experience caecostomy was a definite help in curing an attack, but when the caecostomy was closed the disease returned with greater severity. This operation should be abandoned. The same applied to colostomy. Appendicostomy allowed the colon to be washed out in the most satisfactory way with the least discomfort to the patient, and permitted local application to the colon. This operation had not found the favour it deserved because surgeons generally had neglected its finer points, the after-treatment had not been thorough, the relapses had not been treated promptly, and too often the opening had been allowed to close.

Mr. McEvedy said that in his cases with proctitis he gave half a pint of saline with a teaspoonful of sulphanilamide per rectum each evening. This was generally retained. Relapses were treated promptly and the results had been most encouraging. In other cases an appendicostomy was performed as early as possible. Each evening the colon was washed out with saline followed by a pint of saline with a teaspoonful of sulphanilamide powder. Sulphanilamide and sulphaguanidine by the mouth had been disappointing. In only 5 out of 42 cases in the last five years in which appendicostomy was part of the treatment had the patients died.

MENTAL HEALTH IN WAR INDUSTRIES

At a meeting of the Section of Psychiatry of the Royal Society of Medicine on June 9, with Lieut.-Col. A. A. W. PETRIE in the chair, the effect of wartime industrial conditions on mental health was discussed.

Dr. W. BLOOD said that he was medical officer to an industrial concern engaged in food manufacture, employing several thousands of people on a working week of 48 hours, with overtime as required. In 1940 2.7% and in 1941 2.1% of all sick leave was due to psychological illness. Probably a certain number of cases masqueraded under "gastritis" or "rheumatism," so that the lost time was somewhat understated. The high figure for gastritis in 1940 (9.5%) might have some psychological significance on account of the conditions in that year (Dunkirk, air raids, etc.). A fair proportion of absenteeism otherwise unexplained was due to mental ill-health in its widest sense, or to fatigue. The increase in accident incidence he attributed to the entry of older and less experienced workers. It would be useful to have a medical psychologist attached to every accident clinic so that patients could be observed and put under treatment immediately any signs of depression after recovery from accident were noted. As it was, patients sometimes got steadily worse, and nobody troubled because it was nobody's business once the injury itself had been treated. Most foremen and managers said that workers were more "touchy" than before the war; this might be due to the fact that many were dissatisfied with their work but were unable to leave owing to the Essential Works Order. The doctor as well as the manager or foreman should be prepared to listen to troubles real or imaginary; if they were imaginary, mere patient listening often worked the cure, but sometimes the cause of the trouble, or of an aggravation of it, was found in the factory and could be dealt with by the management. Wages, hours of work, security, and conditions generally being satisfactory, he attached most importance to harmonious relations within the works, with full recognition of the worker as an individual, and to the development of social groups within departments. A well-run welfare department and sports clubs were useful preventive measures.

Women in Industry

Dr. JOAN HARWOOD said that she had been interested in a factory in an area not purely industrial, where many of the younger workers had left to be replaced by older people. The war effort had provided large numbers of bored persons with interests, and lonely persons with companionship, and had relieved the economic anxiety of some, while adding to that of others. Workers of the older generation had been given a heightened sense of their value, and absorption in work afforded relief of tension and depression following family separation. At the beginning of the war factories were badly blacked out and gloomy, so that it was necessary to work by artificial light, which was a frequent cause of depression; but with improvement in lighting and ventilation this was removed. Dingy canteens and poor cloakroom arrangements depressed the women, as did unsightly protective clothing. Long working hours, lack of sleep, and spells of night work were detrimental,

especially to married women or women who had home responsibilities for dependants. Bad transport was another exasperating factor. Careful selection and placing of workers from the medical as well as the psychological point of view would cut down fatigue. Rhythmic exercises before a heavy meal were beneficial. The executive man or woman—especially the older woman—was a problem. The woman often received less toleration than she should at a time when she was feeling her age, but the average woman responded well to encouragement. The fear of losing her job was present to the older woman, though not in the same degree to the younger, especially if she was one of a group. Illness was often a synonym for homesickness. Higher pay for dangerous work had a good effect; people were more willing to fall in with safety precautions if there was a financial incentive.

Experience in the Last War

A paper by Dr. H. M. VERNON mentioned his experience during the last war, when this question was approached more from the medical than the psychological angle. Mr. Lloyd George at that time appointed a Health of Munition Workers Committee because of the sickness which was being experienced. At that time, of 1,300 women examined 35% showed some signs—and a further 7% pronounced signs—of fatigue or ill-health. A large proportion of the defects, including those put down to "indigestion" or to menstrual and other disorders, were of mental origin. It was found that on a 12-hour day accidents were three times greater than on a 10-hour day. Men appeared to be much less affected by long hours of work than women. The principles of industrial medicine established during the last war had been too much neglected. A considerable proportion of both male and female workers were engaged for excessively long hours—ten or more a day—and it was only too likely that these and other unsatisfactory wartime conditions were adversely affecting the physical and mental health.

The PRESIDENT said that there was a limit of hours—about 56 a week for women—above which the worker could not go satisfactorily. Many women were trying to do a double job, and it was marvellous how they did it. More emphasis should be placed on reasonable shopping facilities and an easement of transport difficulties.

Dr. MILLAIS CULPIN said that a medical staff which could handle difficulties would keep down the sickness rate in a factory. There was a wide difference in peacetime in sickness rates in different factories; it varied from 3 or 4 days per head per annum to 18 or 19 days. It was an advantage to interview the workers and encourage them to talk. Rest pauses were most necessary in concentrated work, and research was needed as to how long those pauses should be in work of different types. A good deal of the investigation carried out in the last war had been overlooked, particularly with regard to long hours of work. In many cases the 10-hour day produced a better output than the 12-hour. In questioning workers he had found a correlation between sickness rate and dissatisfaction with the job.

In some further discussion Dr. T. O. GARLAND suggested that it was not good to separate illnesses predominantly psychological from those predominantly physical; the problem should be viewed as a whole. He said that few doctors could be spared for industry, and it was an immediate task to instruct shop stewards, union officials, and the like in matters of simple health, psychology, and accident prevention. Dr. S. L. SIMPSON commented on the absence from the discussion of any reference to nutrition. There was some vitamin C deficiency; scurvy was only one expression of it, and there were substates of which fatigue and irritability might be manifestations. The discussion had concentrated on the mental health of the workers, but the mental health of managing directors and others occupying important posts must not be overlooked. This called for special consideration by all interested in industrial psychology because of the effect throughout the organization.

Dr. SKOTTOWE suggested that an attempt should be made to separate mental illness of endogenous origin from upsets which were superficial and obviously connected with the environment. Major DICKS thought that forms of labour transfer as used in the Army might be employed by the Ministry of Labour so that workers could be placed in the job for which they were most fitted, and Major WILSON asked if there were some elementary intelligence tests which might be applied by welfare workers and would prevent the dull and backward from being misjudged and misdirected.

POSTURE IN INDUSTRY

At a meeting of the Association of Industrial Medical Officers, held at the London School of Hygiene and Tropical Medicine, Prof. H. A. HARRIS, Cambridge, spoke on posture in industry. There were, he said, four elements in the maintenance of posture: (1) proprioceptive impulses from muscles, tendons, and joints; (2) semicircular canal impulses; (3) evidence of the visual fields; (4) tactile sensations, especially from the soles of the feet. The sum total of these four gave the information to the brain which was necessary for the determination of posture. In fact, posture might be described as the "neuromuscular mechanism by which man keeps himself right side up with the world, so that the world would appear right side up to him." If the influence of any of the above factors was absent, then steadiness or maintenance of position would be upset. As an example, he referred to the importance of the feet being warm and of wearing footwear to which one was accustomed when in such a position that the tactile sense of the feet helped to maintain position.

There were certain critical movements, the integrity of which was important if the body was to function properly as a satisfactory machine: (1) Rotation of the head, which was controlled by muscles supplied by the cervical nerves and by the spinal accessory nerve. (2) Abduction of the eye-ball; here the muscles responsible were the lateral recti (the sixth cranial nerve). (3) Abduction of the vocal cords for phonation, activated by the laryngeal branch of the vagus. (4) Supination of the forearm; this was controlled from branches of the musculocutaneous nerve, the fibres being derived from the sixth and seventh cervical segments. (5) Abduction and adduction of the fingers, controlled by the deep branch of the ulnar (C_8 T_1). (6) Opposition of the thumb, activated by the median nerve, which contained fibres from the sixth, seventh, and eighth cervical segments. (7) Eversion of the foot. This movement, which was among the last acquired during the process of a child's development, depended on the integrity of the external popliteal nerve; the grave disability which followed Pott's fracture was the result of inability to perform this movement freely. (8) The action of the gluteal muscles was important in that these muscles controlled movement of the body forwards from the standing-still position, from sitting to walking, and in speeding up of pace, carrying, etc. They were enervated by the gluteal nerves, which contained fibres from the fourth and fifth lumbar and the first sacral segments. It was noticeable that when any of these critical movements were interfered with, one of three nerves was usually affected. The sixth cranial nerve, the ulnar nerve, and the superior gluteal nerve appeared to be most vulnerable to attack by injury or disease. The gluteal nerve, which consisted of fibres from the fourth lumbar segment, followed a very complicated course; this might be, in part, responsible for its vulnerability.

Prof. Harris then referred to the importance of remembering the ages at which certain epiphyses joined up, so that the strain of heavy lifting might be avoided at an early age where this would be dangerous. He cited the coracoid process, to which the biceps muscle was attached, and the ossification of the pelvis at puberty. The epiphysis of the coracoid process joined up at the age of 15; for this reason heavy lifting by young boys should be avoided. The centre of the os innominatum did not attain full bony maturity until the age of 18; before that age girls should not be called upon to stand for long periods. Many accidents were due to the fact that cramped posture did not allow muscles to respond rapidly when they were needed to do so. In conclusion, Prof. Harris said he was often asked whether factory work might not have a deleterious effect on women's health. Provided there was intelligent awareness of certain elementary medical and physiological facts, there was no reason why this should be so. A brief discussion followed.

Correspondence

Social Medicine

SIR,—I should like to thank both Sir Robert McCarrison and Prof. Charles McNeil (July 11, p. 51) for their endeavours to amend my definitions of social medicine. The term is so broad and comprehensive that it was perhaps unwise to attempt a definition at all, and yet I felt that the importance and interest of the subject required a clarification of its meaning. Sir Robert, suggesting the omission of the word "clinical" from my first definition, rightly asks—"For is it not largely because doctors have confined themselves to clinical (or bedside) medicine that the ultimate causes of disease have been neglected and the progress of medicine delayed?" But we could as justly ask in return—"Is it not because the study of aetiology has fallen so largely into the hands of the laboratory worker, who concerns himself with the intimate causes of disease, that the ultimate causes have been neglected?" Neither the clinician nor the laboratory worker has sufficiently studied his problems "in the field."

The good clinician concerns himself actively with all the human aspects of his problem—personal, genetic, and environmental—and has at least some of the opportunities and training of the "field worker." He has not hitherto been able to secure the opportunity of extending his activities to include the fuller study of environment, or taken it upon himself to recommend many changes in environmental conditions which he knows he could (given the opportunity) prove to be detrimental to human health. The training and office of the medical officer of health, on the other hand, although they may some day do so, do not at present secure for him the clinical opportunity to fit him for the new and larger tasks of social medicine as we begin to visualize them. It was for reasons of this kind that I included the word "clinical" (employing it in its widest sense) in order to emphasize the importance of this intimate human relationship, of the study of man *in* his environment, for without this no student of social medicine will ever fully justify his tasks.

While agreeing with Prof. McNeil's desire to lay stress on the preservation and advancement of health as opposed to the prevention and cure of disease, I do not think that "applied physiology" would be as apt a definition of all that social medicine intends as my abbreviation "applied aetiology." Physiology is concerned with the study of nature or function and so can help to establish standards of healthy function. Aetiology is concerned with the discovery of the causes of ill-health and so of the conditions necessary for good health. Social medicine is concerned with the practical applications of such discovery.—I am, etc.,

Guy's Hospital, London, S.E.1. JOHN A. RYLE.

SIR,—Prof. John A. Ryle's letter (June 27, p. 801) is balm to the worker in public health. May I be allowed to welcome it as the first sign I have yet seen from the hierarchy of the profession that their view of disease is, by contract of their calling, grossly and unscientifically limited by the walls of hospital and consulting room? One may even go further, and suggest that the "ultimate causes" are of equal status with the "intimate causes"—the specific factors, "bacillus, chemical poison, or vitamin deficiency"—to which, as Prof. Ryle says, the teaching and indeed the whole theory of medicine have been generally confined. The teaching of medicine needs be now radically reformed in the light of the generally accepted view of its object as "positive health and the prevention and cure of disease." Positive health requires the extension of physiology beyond the normal functioning of the body in normal surroundings to the limits of capacity and endurance of each organ and function; to the defence of the body against physical or biological attack; and to the application of physiology in the mass to the living conditions of the community. This surely is the only proper scientific introduction of the student to the medical profession in the new and wider light of its objects; it should be the basis of teaching for the specialty of public health. Is this not then the "Social Medicine" advocated so well by Prof. Ryle?—I am, etc.,

Hatfield, Herts. FRANCIS FREMANTLE.

Practical Results of Diphtheria Immunization

SIR,—What immunization can accomplish in combating diphtheria is shown by the remarkable drop in its incidence in Brisbane. The local authority of Brisbane has an area of 375 square miles and a population of 341,000. In January, 1938, I decided to make every effort to speed up the council's free immunization service. I used every available means to impress upon parents the importance of having their children—*especially their children of pre-school age*—immunized. The response exceeded my most sanguine expectations.

In the 4 years and 3 months period—namely, from January, 1938, to April 30, 1942—I have fully immunized 27,217 children. This rate of immunization in Brisbane, which is averaging approximately 6,400 per annum, is, in the period under review, considerably in excess of the birth rate. To this must be added an unknown but considerable number of children immunized by private practitioners in Brisbane, and I am pleased to be able to state that as I write the response of children is still being maintained. Records disclose that at least 75% of this total are children of pre-school age. By educative methods the stage has now been reached in Brisbane when the vast majority of parents realize that they owe this simple duty to their children.

The maximum incidence of the disease occurs during the second, third, and fourth years of life, and as large numbers of immunized children of this age group are appearing every day in increasing numbers in Brisbane the incidence of the disease now shows the anticipated spectacular fall. The following are the figures for this period:

	1938	1939	1940	1941	1942 (3 months)
Population ..	325,890	326,000	333,560	335,520	341,000
Diphtheria cases	459	505	231	202	22

Brisbane now has at least 80% of its susceptible child population immunized; the occurrence of only 22 cases for the 3 months of 1942 is a phenomenally low incidence in a population of 341,000 people, and the objective of a diphtheria-free Brisbane for which I am striving is, on these figures, soon to be attained.—I am, etc.,

RALPH WEAVER,
Brisbane. Medical Officer of Health.

District Nursing Service

SIR,—Evidence accumulates that much too little use is made by doctors with panel practices of the facilities afforded by the district nursing service. In far too many cases the doctor is insufficiently aware of the benefits which that service can render to his patients, and some doctors seem almost wholly unaware even of the existence of the service. The insistence now placed by the Ministries of Health and Labour on the advisability of close liaison between the factory medical officer, nurse, or welfare officer with the local district nurse and with the panel doctor makes it all the more important that the panel doctor should make more use of the district nursing service, though the benefits to be derived from it are applicable not only to active workers but to every class of panel patient. A recent illustration to which my attention has been drawn is that of an employee at a large aeronautical factory who was absent from work for a fortnight owing to cellulitis. Her panel doctor advised her to rest, but also to attend daily at his surgery, to which she had to walk some distance. Although this patient was actually a contributor to the district nursing service, the doctor never thought about putting her in touch with the district nurse, which she had not the initiative to do for herself.

I cannot too strongly urge, particularly in these times when doctors and hospitals are much overworked, that panel doctors, as well as the welfare organizations of factories, should bear strongly in mind the relief which can so often be given, both to their patients' ailments and to their own time, by the use of the district nursing service which is almost universally available.—I am, etc.,

HORDER,
Chairman of Council, Greater London Provident Scheme for District Nursing.

Mass Examination of Sputum

SIR,—In view of the proposed employment of wholesale *x*-ray screen photography for the detection of so-called symptomless pulmonary tuberculosis would it not be as well first of all to concentrate more fully upon detecting those numerous cases

which do show one of the most obvious and characteristic symptoms—i.e., the presence of sputum? We know only too well how many patients presenting themselves to busy practitioners, complaining chiefly of cough and sputum, are regarded as "colds," catarrhs, winter coughs, influenza, bronchitis, asthma, etc., and in how few cases the sputum is examined as a routine measure. It is this routine "mass" examination of sputum which should be made possible, and almost compulsory, for every practitioner to obtain by the extension and amplification of laboratory facilities throughout the country, with provision for concentrated and specialized examination. Unlimited sputum-sample outfits should be supplied to all G.P.s, and a nation-wide campaign instituted on the importance of this routine procedure in every case where sputum is likely to exist.

It would naturally be understood that a finding of "Negative for tubercle" in such an examination might have no significance whatever, and the referring of suspected cases for further investigation should in no way be affected, even intensified. Thus no sense of false security would be engendered by obtaining negative results, and numerous cases of early and active infectious disease and chronic "carriers"—i.e., the true danger to the community—would be brought to light. If such a procedure were universally adopted, I am sure that every patient would very quickly come to expect that a sample of his sputum, whenever present, would always be required for examination as a matter of ordinary routine.—I am, etc.,

LEONARD HEARN,
Senior Tuberculosis Officer.

Nottingham.

Passive Movements for Joints in Paralysed Limbs

SIR,—There has been no time in our surgical history when there was more lively interest in the treatment of fractures and injuries in general. The physical treatment of these conditions is now well understood, and there is general and well-deserved condemnation of passive movements. But our good intentions may sometimes carry us too far, and passive movement has become such a bogy that we forget it may have its uses. After nerve injuries and other paralytic conditions such as poliomyelitis, active movements cannot always be performed for the very simple reason that there are no muscles to carry them out. In such a case serious stiffness may result and in joints that are anatomically normal.

We have been called upon to deal with many rather tragic cases in which the joint stiffness was so severe that the disability resulting from it far outweighed that from the nerve injury. Several of my colleagues working elsewhere, in discussing this problem, have said: "But does it really matter? You can always get rid of the stiffness if the joints are normal." In some cases, I agree, you can, and it takes many weeks of very hard work, so causing quite unnecessary delay in the repair of the nerve lesion. In a few cases, especially in the shoulder and hand, the stiffness is permanent and sometimes quite disabling.

Just what is the objection to moving a normal joint passively? I can see none, so far as the joint itself is concerned. It stretches the paralysed muscles, but is this harmful? There is not one shred of evidence to show it. Prolonged stretching may do harm; occasional gentle stretching within a normal range is almost certainly innocuous. The trouble is that we think of splints for nerve injuries as we do for fractures—in terms of immobilization. A paralysed limb should not be immobilized; it should be splinted so that the affected muscles are relaxed, and if movement can be allowed within the range of relaxation so much the better. This principle underlies the design of the splints for nerve injuries worked out at this hospital by W. B. Highet (*Lancet*, May 9, 1942, p. 555), but even these appliances cannot be used to the best advantage if passive movements are neglected. If a patient is not instructed in the daily movement of a paralysed limb it is better not to splint him at all, for the worst stiffness comes not from simple neglect, though that may be bad enough, but from uninterrupted splinting; it is particularly pernicious when a faulty appliance is used, such as the "fish-server" cock-up splint that disgraced the E.M.S. equipment at the beginning of the war.—I am, etc.,

H. J. SEDDON.

Wingfield-Morris Orthopaedic Hospital, Oxford.

Sacro-iliac Strain and Subluxation

SIR,—I was interested in the letter by Mr. C. Jennings Marshall (Jan. 3, p. 22) dealing with sacro-iliac strain and subluxation. I agree that an appreciable number of sufferers from chronic backache are allowed to go on suffering owing to the fact that the real cause is unrecognized. It would be pleasant to think that chronic backache due to a sacro-iliac lesion will be as rare as the wrist-strap, once a familiar token of the unrecognized fractured navicular bone.

X-ray films will not show any evidence of the condition known to surgeons as sacro-iliac strain. Mr. Jennings Marshall describes a method by means of which it is claimed that subluxation can be recognized. This method is commonly used by surgeons, and it consists of drawing a line across the film joining the tips of the fifth lumbar vertebral transverse processes, and then drawing another line across the film through the pubic crest; it is claimed that "rotation" can thus be shown. Others draw the first line across the film as above, and a second line joining the iliac crests; if these lines are not parallel, it is claimed that there is sacro-iliac subluxation.

It appears to me that a good deal more faith is placed in the immutability of the bony points of the pelvis than is warranted. The lumbar transverse processes are notoriously irregular. I drew these lines on a number of films of normal pelves, joining a number of different points, and I found that they varied considerably. The pelvic girdle is not necessarily a symmetrical structure. The only absolutely valuable sign of sacro-iliac subluxation which is recognizable at once is that the ilium on one side is superimposed over the sacrum to a greater extent than on the other. I do not think that subluxation should be diagnosed in the absence of this sign. Manipulation can give excellent results, and I have seen dramatic cures effected, but I do feel that these lines are inaccurate, and may make the diagnosis something of a fetish.

The sacro-iliac joint is often badly radiographed. The patient should be placed on the couch absolutely straight, which is not always easy; for a difficult case I can recommend that a fluid level be placed across the two anterior superior iliac spines. The whole pelvis should be included on the film. It is best to tilt the tube about 20 degrees towards the head, centring just above the symphysis pubis. Postero-anterior and oblique views are sometimes useful, but in every doubtful case stereoscopic films should be taken.—I am, etc.,

JOHN A. ROSS,
Major, R.A.M.C.

Complacency in Anaesthetics?

SIR,—Interesting as have been the letters under the heading "Complacency in Anaesthetics?" it seems to me that some essential points have not been made, and as one who has been an active specialist from a "rag-and-bottle" studentship until now I may claim some authority to speak.

The real complacency is not "modern"; it dates back to "rag-and-bottle" days and consists in essence in the fatuous assumption that anyone who has taken a qualifying diploma is thereby fitted to give anaesthetics. No one in his senses would allow the latest-joined house-physician, or assistant in general practice, or other junior who happened to be "odd man" at the moment, to remove an appendix without proper supervision; yet such are habitually allowed (or perhaps compelled) to give anaesthetics, although the life-and-death responsibility lies more heavily in the great majority of cases on the anaesthetist than on the surgeon. This state of affairs was deplorable enough when there were at most two or three anaesthetic drugs in general use, but it is exaggerated to the point of a public menace now on account of the multiplicity and complexity of anaesthetic agents and procedures.

The minimal requirements in anaesthetics for qualifying diplomas are so ridiculously inadequate for practical work that no one who has not done a postgraduate course of the most exhaustive kind should be permitted to administer without expert supervision. (Even the D.A. is no real protection against the theorist devoid of the necessary judgment.) Yet it is almost impossible to get medical men to attend such courses. Although the expenditure of time and money would be very slight, the horrid figure of complacency or *amour propre* stands in the way, and the usual attitude is that every qualified medical man "knows all the answers" and that anaesthetics need no special study. That there are other and less creditable motives than mere complacency for not employing specialists we all know, and I refrain from labouring the point.

If there has been any deterioration in anaesthetic mortality figures, which has not been shown to date, there are many

factors which would easily account for it, such as: (1) The constant introduction of new anaesthetic agents used only too often by persons without the necessary anaesthetic, therapeutic, or physiological knowledge, and the unavoidable element of experimentalism thereby involved. (2) The fact that so many of these agents are intravenous, making the amount of judgment required much greater. Drugs once put into the bloodstream cannot quickly be got out, and damage is irreparable before it is obvious. (3) The enormous amount of operating now done relative to the supply of anaesthetic specialists. (4) Surgeons have come to rely on the safety of the expert anaesthetists and credit all administrators with the same skill. They are, therefore, getting slower and slower in surgical procedure. In the "old days" time was recognized as a serious consideration (who has not tired at the constantly repeated "Is he all right, doctor?" from over-anxious surgeons?). Whereas now, new and more tedious, if neater, methods of suture, elaborate skin-towelling, multiple operations under the same anaesthetic, application of plaster splints, *x*-ray control, and the infinitely greater scope of surgical intervention have put considerations of time far into the background, and placed a far greater tax on the resources of patient and anaesthetist.

Although I am certain that publication of more figures will dispel any tendency to alarm, the one way to improvement and non-complacency is surely to employ only specially experienced anaesthetists, and to increase the supply of them until no one need undergo any operation, in any but uncivilized parts, without such assistance. In so far as apparatus is more complicated and drugs more numerous, it is merely retrograde to deny to patients the benefits obtained from these advances, both during and after the operation, and to return to the crudities of "open" administration, merely because the latter is perhaps easier to teach to students and (save the mark!) nurse "anaesthetists." We do not limit surgery to the abilities of the latest-joined house-surgeon; let us insist on applying the same standards to anaesthetics as to surgery.—I am, etc.,

Stanmore. REGINALD KARN.

Urethral Instrumentation

SIR,—How unhappy to-day is the lot of the medical practitioner! Slowly but surely he is being stripped of his competence to perform all those simple procedures he learned in his student days and believed, and was taught to believe, that he would employ for the benefit of his patients and for the sake of his living in postgraduate life.

Ante-natal treatment, midwifery, child welfare, anaesthetics, immunizations, and minor surgery are all being filched from him by the public health experts (canvassing by advertisement) and by ever-increasing numbers of specialists. In fact, I have heard it said that nowadays all a practitioner needs to run a practice in a densely populated area is a pen, paper, stethoscope, thermometer, and catheter. And now my old friend Mr. Gordon Bohn writes to say that the general practitioner must discard the catheter and replace this valuable instrument of general practice by the telephone. He writes to challenge Mr. Clifford Morson's statement that a "general practitioner will benefit his patient by passing a catheter" in a case of acute retention, and even suggests that senior students be taught when not to pass a catheter, with acute retention due to an enlarged prostate heading the list of their restrictions. He honours us by assuming that we may avoid making a false passage and that our aseptic technique is beyond reproach, but he fears that in the excitement of the moment we may let off all the urine and kill the patient by anuria and bleeding from the kidneys. In spite of granting us asepsis and faultless technique he dubs our efforts as "interference by the practitioner," which of all his implications I find the hardest to receive.

Mr. Bohn believes that we should send all our cases of acute retention immediately to hospital or nursing home before the retention is relieved. In ideal surroundings Mr. Bohn is making a scientifically sound statement, and given a willing patient in little pain, a fast ambulance, a smooth road, and a good urologist in waiting, I can imagine no circumstances more propitious for avoiding the horrible catastrophes he mentions.

Personally, I am never more conscious of my halo than when I have turned out at night to catheterize some poor old man who has been in agony all day trying to pass his water, and, due to my interference with a rubber catheter, experienees that glorious relief a taste of which may be experienced by the ordinary man who has to hold his water a couple of hours longer than he likes. Perhaps unduly biased by the patient's gratitude, it is difficult to believe that in catheterizing him one has sinned against the laws of urology, instead of performing an act of mercy if not of competence. I have examined my surgical textbooks and the *B.M.J.* back to 1938 for another authoritative opinion, as I consider the matter of great importance. The last article in the latter was by Mr. R. Ogier Ward (Jan. 21, 1939, p. 121), and although only three years past, it seems to uphold my conception of procedure. As I understand it, one's duty is to take a history, examine the patient thoroughly, order a hot bath, give an injection of morphine, and if this fails proceed to catheterization. A soft rubber catheter of average size passed with full aseptic technique is often successful, and, as Mr. Ward points out, is a diagnostic as well as a therapeutic measure. If this fails, a soft silk-web coudé catheter, correctly sterilized, may be introduced. If the bladder is not distended above a third of the way to the umbilicus it is presumably safe to run off most of its contents forthwith. If, on the other hand, there is a history of chronic retention, greater distension, and any uraemic signs, gradual decompression can be carried out with a drip-saline bulb attached to the catheter, and hospital treatment discussed with the patient when he is more comfortable. In any case of difficult catheterization the patient should be sent to hospital before trauma results.

As acute retention occurs in those generally well advanced in years, I think it is necessary not to be too precipitate in pushing the patient into hospital. Hospitals and operations are not always as acceptable to the old as to the young, and personally I never use the urgency of the patient's disease as a lever to get him into hospital unless forced to do so. Often the acute retention patient is debilitated from other causes, and there can be very little object in forcing into hospital an old person whose days are already numbered, if by so doing he may live a little longer, but in discomfort from investigation and procedure for which he has but little stomach. Mr. Bohn's procedure is to be recommended in his own district, where all the facilities abound, but in a district like this primary catheterization by the practitioner at home should be justifiable for diagnosis and treatment. It has also the virtue of retaining the patient's regard for the practitioner, which is apt to dwindle if relief is withheld on technical grounds.

In conclusion, may I ask Mr. Bohn to elaborate his advice and describe what happens to the patient when admitted to hospital in his district. I should like to add that in spite of the increased sale of penile clips following perurethral resection, I consider that method to be the one of choice for dealing with enlarged prostate, and I should be loath to disqualify my patient for this operation by performing a single careful catheterization. I cannot, however, believe that I should.—I am, etc.,

St. Ives, Cornwall. E. C. ATKINSON.

SIR,—With reference to Mr. Clifford Morson's letter (June 20, p. 771) I, and I am sure many of the older general practitioners, would owe a debt to Mr. Morson if he could spare the time to let us know the present-day teaching of how to pass a silver-plated old-style catheter on the living adult subject whose urethra is not diseased or deformed. We were taught to do this in the long past on the dead subject in the dissecting room: but, though this was simple, in practice on the living patient it was far from simple. Matters have of course moved on since our student days. The subject is a most important one.—I am, etc.,

Clogher, Co. Tyrone. HENRY SMITH, M.D.

Post-vaccinial Encephalitis

SIR,—Flight Lieut. G. D. S. Briggs's description (June 27, p. 791) of three cases of post-vaccinial encephalitis is of special interest to medical men in Scotland, where at the present there is a marked increase in primary vaccinations among the higher age groups. Dr. Briggs's cases appear to have been of the hyperkinetic type of encephalitis, and I herewith give a short report on a case in which the main picture was that of somnolence, altered sleep rhythm, and spastic paralysis.

The patient, a member of the W.A.A.F. aged 20, was admitted to hospital suspected of suffering from cerebrospinal meningitis. Vaccination had been carried out for the first time 10 days before, and on the day before admission she complained of headache, dry throat, pains in the limbs and back. She had also fainted. On admission a well-marked pustule was noted on the left arm with a fairly severe reaction spreading almost from shoulder to elbow. The patient was drowsy, but would answer questions on being roused. Photophobia, slight general rigidity, positive Kernig's sign, and exaggerated knee-jerks were all present. Babinski's reflex was indefinite, pupils were equal but reacted normally, but there was a marked spastic paralysis of the right arm. Lumbar puncture revealed a normal fluid not under pressure.

During the next five days the patient's condition altered little. On the sixth day the temperaure, which had remained between 100° and 101° F., became normal, but the patient remained drowsy during the daytime and suffered from sleeplessness during the night. Spasticity of the right arm was still present. On the thirteenth day of illness she was allowed up, but on the following day she complained of pain in the left lumbar region between the lower costal margin and the iliac crest; slight redness of the area being here noted, she was returned to bed. Eventually there developed in this region a patch of herpes about three inches in circumference. On the twenty-eighth day she was again allowed up, still slightly drowsy during the day and not sleeping well at night. Her general condition was poor. She was discharged on the forty-second day of illness greatly improved but still suffering from insomnia, which was clearing up.

The case was of interest, apart from the altered sleep rhythm, on account of the localized spastic paralysis of the right arm, a similar type of paralysis being noted about the same time in a child of 4 years who was suffering from early cerebrospinal meningitis, but in the latter case it progressed to involve the leg and the face on the same side.

It may be that, on account of the youth of most of the subjects of primary vaccination, the true incidence of mild post-vaccinial encephalitis is underestimated, a drowsy child during the daytime being accepted by the parent as a normal state of affairs, and a fretful child at night as being the result of the vaccination trauma.—I am, etc.,

J. LANDESS HORNE,
Medical Superintendent.

County Infectious Diseases Hospital, Strathpeffer.

Serving Officers and Medical Planning

SIR,—There is one group—namely, medical men in the Services—which watches the discussions regarding post-war medical planning with anxious interest. The anxiety is due to the fact that many of us, with family responsibilities and faced with the prospect of making a new start after demobilization, feel that we are at a disadvantage. Although most vitally concerned, the very fact that we are under Service discipline makes us the most inarticulate section of the profession.

As a profession medical men claim to show disinterestedness in matters concerning the public weal. Nevertheless, although sincere, the fact remains that the judgment of most of us is liable to be affected by circumstances involving the fundamentals of our economic life. This is made clear when, as I have found during conversations, most Army medical men seem to favour some sort of national medical service, while those in well-established private practice are mostly "doubtful," to say the least. The object of this letter is to make a plea that the disadvantageous position of Service men should not be overlooked by those who decide the issues. The very fact of having been asked to make sacrifices should give them some claim for consideration.—I am, etc.,

"M.O."

The Planning Commission's Report

SIR,—The draft interim report resembles in many respects a pamphlet on the question of the minimum requirements for children.[1] We are now presented with the minimum requirements of the medical profession. It is hardly likely that it will meet with quite as favourable a reception as did the admirable report on the children.

[1] Issued by the Children's Minimum Council, 72, Horseferry Road, S.W.1.

No matter how excellent the plan may become in its final draft there can be little doubt that it will have to be hawked round the various political parties for support. It will ultimately be put into operation by the Government of the day, which may or may not be in sympathy with the views of the Commission. In this process the plan will be altered to suit this or that political expedient.

Would it not be better, as a preliminary step, if the Commission determined the patients' minimum requirements? They could find out, say, the 50 most common ailments met with in general practice as shown by a research of the National Health Insurance records. It could then lay down the minimum investigation and treatment required. It is doubtful whether the beds, medical, nursing, and technical staff, or the equipment are available, even in peacetime. Consideration of the financial aspect would but add to the general deficiency. Let the Commission consider these minimum requirements and tell the patients—i.e., the electorate—what is wanted. It will then be incumbent on the patients to demand these requirements if they wish them.

The profession would do well to by-pass the direct political approach, but to be ready with the prepared plan at the appropriate time should the pressure exercised by the patients prove sufficient.—I am, etc.,

A. B. STEWART.

Finsbury Health Centre, E.C.1.

SIR,—To a country practitioner the draft report is a disappointing, patchy, and urban production, which illustrates McDougall's point that the effort of a band of men is generally unworthy of any one of them individually. They have left out two-thirds of England, for para. 70 leaves us very much as we are now, and few even of the market towns have six doctors, the suggested minimum for a health centre; and of the difficulties of transport, which must carry the colds, chilblains, and colics—nine-tenths of a doctor's surgery—not a word. Truly a metropolitan myopia.

From the very start, from reading the objects of medical service and the first of the questions, so reminiscent of the League of Nations Union's "Do you prefer peace?" or the temperance reformers' "Do you deprecate drunkenness?"—pious blurbs embalmed in words, shop-window stuff—I became suspicious. Since when has it not been our aim to do our best for our patients? "Positive health" made me squirm. To my mind this nebulous phrase suggests leading a hygienic camp life with good food and keeping as far away from doctors as possible. Do these 73 elderly city fathers know anything about it? Did they deliberate in shorts and no collars in the open air, do they exercise every muscle every day, do they obey the seven rules of health, grasp the gifts of sun and air, defaecate at a squat? Have they taught the students these things or have they left it to the *Daily Mail* and the Boy Scouts? In fact, wasn't "positive health" coming from them rather nonsense?

The question of freedom of choice with us is academic. Two things compel a man to go to a certain doctor—geography and custom. He who lives at Little Snoring or Snoring Green will go to the Great Snoring doctor because he would have to go 7 miles to another, and even he at Snoring Virginibus, 6 miles away and so much nearer the Lower Sighing doctor, will gladly make the distance because his father did.

Of course there are many suggestions that will meet with almost universal approval, and although, personally, I should prefer to build on to or alter the house where Sydenham lived, where Hunter worked, which Osler has not long left, I can quite understand that young men want something more drastic done. For don't let the commissioners imagine for one moment that they have exhausted half the possibilities. A whole-hog scheme, for instance, with a great central health and hygiene house, with forty million dossiers recording the physical history, illnesses, work, holidays of everyone in these islands (a genetic map could be added probably towards the end of the century) from the time when he or she was a mere movement in foetal life or before, till they come to the necropsy table, a scheme which will try to prolong in happiness and usefulness the interval between these events, a scheme of which the patient is really the centre and the doctor merely serves to that end, has at least the merit of being logical.

At any rate there is no hurry. The Ministry of Health has told us that the health of the country has never been better, and, personally, I have been looking round in vain for the patients who would have benefited had any of these schemes been in operation years ago. Significantly and monitorially the one exception is tuberculosis, a disease that has been a Government responsibility for years, employing an army that has always seemed to me to have a positively "Whitehallian" lack of punch. How rarely one hears of a keen, cavity-squashing, sputum-blitzing T.O.! My experience is of quite charming, unworried roundsmen. Who ever heard of a T.O. being appointed because of his aggressiveness against T.B.s? Probably if he were he would soon run up against the county M.O.H., who is also chief T.O., although he may know little about it. Anyway it is a relief to see the proposal (para. 14) that the appointments should no longer be made by the butcher and baker.

Truly this report is meat for discussion, but where are the vultures? I resent the note of hurry, not so much in the report itself as in the last paragraph of the leading article that accompanied it. Shall Libyan sands re-echo to debate and ward-rooms thunder? For in like places are the best of us. Never was time nor temper nor space for script less suited for discussion. Let us beware of the fate of the extinct Iwash Indians, of whom it is recorded that when in time of war the young men were away, the old men violated their wives, so that when the warriors returned they slew (1) the old men, (2) the unfaithful wives, (3) the young bastards.—I am, etc.,

C. G. LEAROYD.

Diphtheria in an Infant

SIR,—I should like to report that I have recently had a case of diphtheria in a baby 12 days old, born in the maternity ward of Honiton Infirmary. It was healthy at birth, and on the twelfth day was found to be snuffling; the following day the throat looked suspicious and swabs were taken. The Devon County bacteriologist reported as follows: "Cultures made from swabs of throat and nose were found to be positive for diphtheria. A virulence test on guinea-pigs was made from both cultures, and in both instances the test guinea-pig died within 48 hours of inoculation, and showed their typical post-mortem signs of death from diphtheria."

The baby's mother had no evidence of any infection of nose, throat, or vagina either before or after confinement. Swabs have been taken from everyone who came in contact with the child, with negative results.—I am, etc.,

Sidmouth. C. M. B. CASE.

The Rheumatic Lung

SIR,—Dr. James Burnet stated (June 27, p. 804) that he was probably the first to call attention to this condition. However, A. E. Garrod, in his *Treatise on Rheumatism and Rheumatoid Arthritis*, London, 1890, pages 106–9, gave a good account of the rheumatic lung, and the possibility of the "rheumatic poison" causing pneumonia was considered. And Garrod was probably not the first.—I am, etc.,

London, S.E.10. ELI DAVIS, M.D., M.R.C.P.

China's Medical Needs: An Appeal

SIR,—The China Medical Aid Committee appeals again to your readers to assist the National Red Cross Society of China. In the past these appeals have been generously answered, and now that China is our ally in name as well as in deed we put forward our appeal with even more confidence.

Three years ago 19 medical men, who had been rescued from concentration camps in the South of France at the end of the Spanish War, were sent to help the Chinese Red Cross, who had asked urgently for trained medical men as well as supplies. This committee, in co-operation with a Norwegian committee, financed and equipped these men and provided their maintenance so that the slender resources of the Chinese Red Cross should not be drawn upon. The help of the Norwegian committee ceased in 1940, and we are the only body to which these doctors can look for support.

The doctors are working on various sectors of China's immense war front, and two have been in the thick of the Changsha battles. All of them are doing invaluable medical and surgical work, and, in addition, organize first-aid training and teach hygiene to soldiers and civilians. They lead the simplest and hardest of lives. The following report, written by a young English doctor, is typical of work in South and Central China.

"Our unit had charge of 100 beds in the hospital, which was otherwise run by the military. But the latter had neither the equipment nor the personnel to cope with the more serious cases, and these all came to us. Most of the cases we had were very severe compound fractures and chest wounds that had survived the first week or so. The abdominal and brain cases we saw little of; they had died before they could be brought to us. But the fractures were bad enough. They had come in carried on make-shift stretchers. Exhausted with pain, their wounds covered with pus-soaked and dirt-stained dressings, and with appalling deformities through lack of adequate splinting, they presented a sorry picture indeed."

The Chinese Red Cross has a task to carry out so enormous that the aid we give seems ridiculously small, but it is an earnest of our appreciation of the heroic resistance maintained by China, and we appeal to you to continue that help for another year. All donations should be sent to the treasurer, Dr. E. R. C. Hambly, Treharrock, Long Grove, Seer Green, Bucks.—I am, etc.,

MILLAIS CULPIN,
Chairman, China Medical Aid Committee.

Obituary

WILLIAM MARTIN, M.B., Ch.B.

Dr. William Martin, who died suddenly on July 7, was appointed medical superintendent of Stobhill Hospital, Glasgow, in 1927, from Birmingham, where he had been medical superintendent of Selly Oak Hospital for about seven years. He was a graduate in medicine of Glasgow University, qualifying in 1914. He joined the Army in 1915 during the last war and served in France with the rank of major. On his return to this country in 1917 he was appointed to Dudley Road Military Hospital, Birmingham. Dr. Martin was unmarried, and is survived by two sisters.

Sir Alexander Macgregor writes: The death of Dr. William Martin closes the career of a distinguished and successful hospital administrator. He not only gave outstanding service to his own large hospital at Stobhill but also to the other general hospitals of the Corporation. After the passing of the Local Government (Scotland) Act, 1929, the Corporation took advantage of his experience by appointing him as deputy medical officer (general hospitals) in the Public Health Department. He came to this office with a high reputation for hospital administration. Under his regime great improvements were effected in Stobhill Hospital, such as, among others, the erection of a large *x*-ray and electrical department, an enlarged maternity unit, a receiving department, and a biochemical laboratory. Plans had been prepared for a new block for sick children and a new nurses' home. He took a prominent share in developing teaching facilities in the hospital, and the following extract from a letter to me from Sir Hector Hetherington, the Principal of Glasgow University may be quoted: "All of us here found in Dr. Martin a most able and friendly collaborator in developing the co-operation of the University and city in medical teaching and research, and we are much moved by his loss."

Dr. Martin was content with nothing but the best, and maintained a high standard of efficiency along with a clear and practical conception of modern hospital practice and development. On the personal side he was a most agreeable and attractive colleague; he was never ruffled by difficulties, and his happy and cheerful disposition was one of his finest assets, attracting the warm friendship and regard of the medical and nursing staffs and of all who served in the hospital in whatever capacity.

We regret to announce the death of Dr. RONALD LESLIE FERGUSON, honorary physician for children at the Manchester Northern Hospital. He was born in 1882 and studied medicine in Manchester and Dublin, graduating M.B., Ch.B. at the Victoria University in 1905 and proceeding to the M.D. four

years later with commendation for his original studies on the digestion of fats, upon which he had worked in close co-operation with Prof. Craven Moore. He had been a member of the B.M.A. since 1908. Two colleagues (P. M. and G. W.) write: Ronald L. Ferguson held many resident appointments at Crumpsall Hospital, Ancoats Hospital, and the Royal Infirmary, Manchester. He also found time to go to the Far East. Later he started in practice in Manchester and pursued a busy and helpful life for 30 years, broken only by three years' active service in Mesopotamia. We realize that few really knew him because of his modesty and shyness, but once these were penetrated, how easily one could appreciate the goodness of the man and the genuineness of his purpose in all things! He was a good sportsman, an excellent bowler, and a capable batsman, and well merited his place in the University team for many years. He was an ardent follower of cricket at Old Trafford. His great sense of responsibility towards his patients caused him to work recently although he knew he was unfit to do so. His passing leaves many happy memories—to patients and friends alike—of a man whose honesty endeared him to those of us who were privileged to know him well.

Dr. GODFREY BATEMAN, who died on June 8, was a past-chairman and a past-secretary of the North-East Ulster Division. Son of the late Godfrey Bateman, LL.D., senior inspector of schools, Dublin, he was educated at Galway and Portora Schools and studied medicine at Trinity College, Dublin, graduating M.B., B.Ch., B.A.O. in 1915, and M.D. three years later. He obtained the D.P.H. of the Irish Royal Colleges in 1919 after serving in the last war as captain R.A.M.C. On returning to civil life Dr. Bateman began practice in Coleraine, and in 1930 was appointed tuberculosis officer for County Derry, a position he held up to the time of his death at the age of 49, after a long period of indifferent health. During his service in Coleraine, Portstewart, and Portrush, Dr. Bateman won the regard of all sections of the community, and in particular concerned himself with the welfare of ex-Service men, for whom he did good work as chairman of the local branch of the British Legion.

Dr. WALTER ROSS JORDAN, who died at Edgbaston on June 13 at the age of 78, was a nephew of Thomas Furneaux Jordan, the famous Birmingham surgeon, and his father also was a doctor. He was educated at King Edward's School, Birmingham, of which he was a Governor from 1917 till his death, and Bailiff of the Governors on two occasions; he was also one of the founders of the Old Edwardians Association and for some time chairman of its committee. He studied medicine at Mason College and the Queen's Hospital, and graduated M.B.Lond. (with honours in medicine) in 1887, proceeding M.D. five years later. After serving as resident physician at Queen's Hospital he was appointed visiting physician at Dudley Road Infirmary and physician to the Children's Hospital, Birmingham; for many years he practised as a consultant in Cornwall Street. Dr. Jordan published a number of papers on paediatric subjects and was a past-president of the Birmingham Branch of the British Child-Study Society. He had been a member of the B.M.A. for 50 years, was vice-president of the Section of Diseases of Children in 1911, and president of the Birmingham Branch 1915-19, in which year he gave the Ingleby Lecture at the University.

News has reached this country from India of the death of Dr. SURENDA KUMAR DATTA, Principal of the Forman Christian College, Lahore. Born in 1878, he was educated at Lahore Medical College and at the University at Edinburgh, where he graduated M.B., Ch.B. in 1906. He returned to Lahore as lecturer on biology at the Forman College, and was a member of the senate of the Punjab University in 1908-14 and again in 1934-42. During the last war Dr. Datta served as welfare officer with the Indian troops in France and was twice mentioned in dispatches. For a considerable time he was National Secretary of Y.M.C.A.s in India, Burma, and Ceylon, and he served three terms as chairman of the All-India Conference of Indian Christians, whose community he represented for three years in the Central Legislative Assembly. He was a member of Lord Lytton's Committee on Indian Students in the United Kingdom, and a delegate to the Indian round-table conference in London.

The following well-known medical men have died abroad: Dr. EDGARD FILGUEIRAS, a prominent paediatrist of Rio de Janeiro; and Dr. ALVARA LEMOS TORRES, professor of clinical medicine in the medical school of Sao Paulo, and Fellow of the Rockefeller Foundation, aged 58.

Universities and Colleges

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

M.D.—A. B. Higginson, C. K. Sconce.

FINAL M.B., CH.B.—*Part III:* Anita M. Beck, S. Bradshaw, E. R. Carter, V. L. Cooper, H. V. Cross, Jean M. Frazer, G. W. Gibbs, Patricia F. M. B. Gould, T. C. Highton, M. Horwich, R. D. Hotston, H. P. Hughes, W. B. E. Jones, J. Littler, R. B. McConnell, Jane C. S. Maclachlan, L. Mandel, A. J. Marsden, R. H. Maudsley, P. D. Moss, J. C. V. Murphy, S. P. C. O'Reagain, G. J. Rees, Hilda M. Reeve, G. C. Roberts, C. D. Rosenwald, D. I. Rowlands, T. L. Schofield (distinction in surgery), Betty W. Steiner, R. V. Tracy Forster, Amabel M. Turner, D. C. Watson, H. H. Watts, W. D. Wilson, Rosalind Zalin. *Passed in Separate Subjects:* J. J. Bligh and R. H. Martin (Medicine, Surgery); J. G. K. Dean, P. J. Devlin, Joan O. Grant, and F. A. H. Inman (Medicine, Obstetrics, and Gynaecology); F. E. D. Griffiths, C. Pownall, and G. A. Wetherell (Surgery, Obstetrics, and Gynaecology). *Part I:* Ethel J. Higgitt, Margaret Slater, Elspeth M. Whittaker.

UNIVERSITY OF MANCHESTER

The following candidates have been approved at the examinations indicated:

M.D.—*By thesis:* J. R. Wardley.

FINAL M.B., CH.B.—[5]Alice Akred, G. Ashe, A. N. Ashworth, Pauline Blockey, [3 4]H. Bolton, H. A. Boydell, [2]D. M. Brierley, [2]W. E. Broughton, P. Cliff, J. G. Coburn, D. G. Crawshaw, Betty J. Dakin, Sheila Egan, D. Eglin, [3]K. Heap, Dorothy Hey, Esther Jackson, W. H. Lonsdale, R. L. Lunt, J. K. McMyn, C. W. Marsden, R. W. T. Mason, Ethel J. Samuel, H. F. Smith, [1 3 4 5 6 7]S. W. Stanbury, O. C. Sugden, D. Sutton, M. Swerdlow, [4]R. H. Townshend, Margaret Wade, [2]A. E. Wall, H. C. Warrington, J. K. Wright. Part I (*Forensic Medicine and Hygiene and Preventive Medicine*): O. E. Adeniyi-Jones, D. J. Atherton, Margaret A. Barber, J. S. Battersby, D. C. A. Bevis, D. H. Blakey, H. M. Blaquière, D. L. Boardman, Alice I. Burke, Margaret R. Burke, J. L. Clarkson, W. Clegg, O. O. Cowpe, Frances G. Danson, H. Davies, C. J. Dewhurst, P. R. Duncan, B. I. Einhorn, L. Erin, F. Fletcher, J. W. Fletcher, Margaret Garnett, J. Grayson, E. J. Guest, G. Hargreaves, C. L. Holden, J. C. Howarth, E. Isherwood, F. Jackson, G. W. H. James, F. W. Johnson, F. Kratter, R. McK. Laslett, Marjorie T. Lee, Mary P. McGlade, R. I. Mackay, A. Marsland, E. B. N. Merchant, Doreen Mitchell, T. Moss, J. G. Oddy, S. Portnoy, P. T. Quinlan, A. Ramsden, F. C. Reidy, P. H. Renton, A. F. Robinson, M. M. Rose, B. Samuels, R. H. Sewell, J. H. Shelswell, Sylvia M. Slee, K. H. Smith, H. Sosnowick, J. L. Taylor, R. Tepper, Lois E. N. Turner, P. Vulfsons, E. G. Wade, Margaret Wardle, Ruth J. Whitley, T. A. Yates.

[1] First-class honours. [2] Second-class honours. [3] Distinction in medicine. [4] Distinction in surgery. [5] Distinction in forensic medicine. [6] Distinction in hygiene. [7] Distinction in preventive medicine.

UNIVERSITY OF ABERDEEN

At a graduation ceremony on July 9 the following medical degrees and diplomas were conferred:

M.D.—A. H. Cruickshank (awarded highest honours for thesis (*in absentia*)), D. A. Hunter (awarded commendation for thesis).

M.B., CH.B.—A. L. Stalker (with first-class honours, passed final examination with distinction), J. Mowat (with second-class honours), A. Adam, Mary R. Alexander, R. M. Allan, E. Anderson, R. M. L. Anderson, H. I. C. Bowie, Inez M. Brebner, D. D. Brown, I. MacD. Brown, A. P. Buchan, I. J. Buchan, Mary S. Buchan, N. Budge, J. Cantlie, T. L. Carr, J. R. W. Catto, Isabel M. S. Chalmers, I. G. L. Craig, J. L. T. Dickie, Margaret S. Duguid, D. M. Dunbar, Lorna L. Duncan, Eileen M. Duthie, G. W. Forbes, Helen S. Fraser, Leslie W. Fraser, W. G. French, R. Gibb, Isobel R. Grattidge, J. Gray, A. M. Gwynn, Muriel O. Henderson, G. L. Herbert, Eilean A. Hunter, J. G. Hunter, T. O'N. F. Kelly, Margaret C. Kemp, W. Y. Laidlaw, Agnes K. Leslie, J. C. Lightbody, R. K. MacCuish, J. C. M. MacDonald, W. H. McGillivray, W. B. McGowan, Dorothy J. Mackay, J. M. McKay, A. A. Mackie, A. H. McLaren, Mary E. C. Maclean, Muriel M. McLean, A. Mair, V. D. R. Martin, Elza H. Meadows, D. G. Milne, J. G. Murray, Cecilia M. Park, G. M. Reid, Alma C. Ritchie, Mary B. Robb, A. F. Ross, G. I. MacD. Ross, K. A. Ross, I. L. Roy, L. S. Rusack, J. K. Russell, A. G. Scott, G. M. Sinclair, Emily S. Smith, E. B. Smith, J. A. E. Stewart A. B. Strachan, Cecilia V. Urquhart, A. Walker, S. J. M. Walker, W. A. Walker, W. Watt, Dorothy M. A. White, G. A. Wilson, J. H. Wood.

D.P.H.—Mary Anderson, C. T. Baynes, Enid M. Clow, Vera D. Davidson.

UNIVERSITY OF GLASGOW

At a graduation ceremony on June 26 the following medical degrees were conferred:

M.D.—A. G. Fergusson (with commendation), A. R. Hunter, B. T. Mann (*in absentia*).

UNIVERSITY OF ST. ANDREWS

The following medical degrees were conferred on June 27:

M.D.—J. Brodie (with honours for thesis and Rutherford gold medal), W. A. Davidson (with commendation for thesis and a silver medal), W. M. Jamieson, C. B. Macdonald.

M.B., CH.B.—*D. R. K. Reid, †G. Smith, †A. J. M. Mathieson, †J. D. B. MacDougall, †J. R. Anderson, †J. W. Smith, †Elizabeth M. McCracken, †Kamala P. Roe, †Jadwiga Mickiewicz, †A. Inglis, †Elsa R. Cooper, †W. M. C. Brown, †D. K. Stevenson, W. G. Birrell, W. W. Black, Mary Cammock, C. N. D. Cruickshank, T. D. G. Fairbairn, Isobel M. L. Fernback, S. Fuller, J. Gemmell, Muriel E. Gibb, D. M. Graham-Service, D. D. Inch, H. E. Kelsick, J. Millar, Janet Mills, Dorothea B. Irving (or Montgomerie), J. A. Petrie, D. E. Robertson, W. D. G. Robson, R. K. W. Sharp, D. McQ. Sibbald, A. R. Smith, W. G. Tait, Edith A. C. Thomson, A. M. Watt, Elizabeth D. S. Wilson.

* With distinction. † With commendation.

UNIVERSITY OF LONDON

Sir Ernest Graham-Little, M.P., has been reappointed as a representative of the Senate upon the Court of London University for a further period of five years from October 1, 1942.

UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC, TRINITY COLLEGE

The following medical degrees were conferred on July 1 :

M.D.—C. G. Ambrose, J. E. C. Cherry, W. A. Gillespie, M. A. Majekodunni, Isabella M. Murphy (*née* Dorman), W. F. Rogers.

M.B., B.Ch., B.A.O.—J. M. T. Adamson, J. E. Adamson, P. St. G. Anderson, Violet K. St. G. Breakey, R. B. Brenan, Franziska G. Brill, D. M. Brooks, Helen U. Croasdaile, J. F. Dignan, J. B. FitzSimons, J. P. Hearne, W. J. C. Hill, E. K. Holland, A. M. Jacobson, H. H. B. Lamb, Dorothy W. M. Last, Margaret E. McClelland, J. McNutt, W. B. Martin, J. J. Musgrave, E. S. Odbert, S. Potgieter, A. W. Pringle, R. C. Rylance, H. Scheyer, K. M. Shaw, I. Shribman, S. B. Stein, F. S. Stewart, W. J. W. Wolfe.

QUEEN'S UNIVERSITY, BELFAST

The following candidates have been approved at the examinations indicated :

M.D.—W. McK. Bonnar (with gold medal), W. Townsley (with high commendation), W. S. L. Gilchrist, S. A. C. Hunter, J. S. Matthews.

M.Ch.—C. C. D. Martin.

M.B., B.Ch., B.A.O.—*K. Aterman, *J. M. Beare, *K. Bew, *D. J. Crawford, *H. C. Dales, *W. S. Hanna, *T. J. Harrison, *R. M. Laird, *Elizabeth F. M'Keown, *H. Montgomery, *E. Morrison, *M. R. Neely, J. H. Adams, Annie W. S. Beck, H. G. Biggart, W. Blair, A. S. Boyd, E. Boyd, R. B. Boyd, J. M. Bradley, P. D. Bradley, J. F. Breach, M. J. Brosnan, J. M. Bunting, Margaret S. Burns, F. C. Calvert, Margaret G. Calwell, A. N. Campbell, A. A. G. Carson, W. Castles, Sarah I. Cochrane, G. H. Connor, P. U. Creighton, W. P. Crone, H. J. Cronhelm, B. J. Cullen, J. Dewar, R. J. Dinsmore, W. J. Driscoll, R. Dunlop, A. S. Effron, C. M. B. Field, Mary I. Fleming, P. A. H. McC. Foster, T. Freeman, Margaret F. Fry, L. Ganz, J. G. Gibson, R. Halliday, R. S. Hamilton, J. A. G. Hart, D. Hay, D. Henderson, Henrietta E. Hunter, R. A. Hyman, Angel M. Jones, D. McM. Kennedy, W. A. Kennedy, A. I. K. Kerr, H. Kerrigan, H. L. Kyle, H. Lantin, A. A. McG. McConnell, R. A. McIlwraith, Mary J. C. McIntosh, Kathleen G. McKee, W. C. McKerr, J. S. McMaster, J. McRobert, J. F. Mark, A. A. McC. Miller, B. P. L. Moore, C. Moore, S. P. Moore, Margaret F. Mulholland, R. S. Murray, Yvonne A. Murray, G. P. Murtagh, J. F. Nicholl, D. A. R. Orr, H. F. Reynolds, Mary E. Ross, S. A. Scott, D. G. Simpson, R. T. N. Simpson, A. Sloan, D. G. Sloan, W. A. W. Small, S. M. Smith, A. E. M. Stevenson, J. C. Stutt, H. A. H. Summers, B. E. Swain, A. E. P Swinson, G. O. Thomas, J. D. Watson, E. L. White, R. J. Young.

D.P.H.—S. H. Carson, J. M. Fullerton, J. H. P. Giff, A. Harbinson, R. Hill, W. H. Hood, A. Hyland, D. P. Kearns, I. M. Librach, J. S. McCann, W. J. McLeod, T. A. Spence.

* Second-class honours.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of Council, held on July 9, Sir Alfred Webb-Johnson was re-elected President and Surgeon Rear-Admiral G. Gordon-Taylor and Mr. L. R. Braithwaite were re-elected Vice-Presidents for the ensuing year. Prof. G. Grey Turner and Sir Hugh Lett were readmitted and Brigadier Hugh Cairns was admitted to the Council.

The following professors, lecturers, and demonstrators were elected for the ensuing year :

Hunterian Professors.—Mr. W. H. Bowen, one lecture on a Study of the Aetiology of Acute Appendicitis ; Mr. H. T. Roper-Hall, one lecture on Premaxillary Cysts ; Mr. L. H. Savin, one lecture on the Surgery of Non-magnetic Intraocular Foreign Bodies ; Mr. J. C. Ross, one lecture on Injuries of the Urinary Bladder ; Dr. Raymond Greene, one lecture on Frostbite and Kindred Conditions ; Mr. S. M. Cohen, one lecture on Traumatic Arterial Spasm ; Mr. J. E. A. O'Connell, one lecture on the Vascular Factor in the Cerebrospinal Fluid Circulation and its Relationship to Intracranial Pathological Processes ; Mr. O. S. Tubbs, one lecture on the Effect of Ligation on Infection of the Patent Ductus Arteriosus ; Dr. A. G. McD. Weddell, two lectures on Cutaneous Innervation ; Mr. W. B. Highet, two lectures on Injuries to Peripheral Nerves.

Arris and Gale Lectures.—Prof. H. A. Harris, lectures on (1) the Anatomy of Posture in Industry, (2) the Clinical Anatomy of the Veins, and (3) the Relation of the Lymphatic System to the Arterial and Venous Systems.

Erasmus Wilson Demonstrators.—Mr. L. E. C. Norbury, one demonstration on the pathological contents of the Museum ; Mr. R. Davies-Colley, one demonstration ; Mr. C. E. Shattock, two demonstrations ; Surgeon Rear-Admiral C. P. G. Wakeley, two demonstrations on Injuries of the Skull and Brain.

Arnott Demonstrator.—Prof. A. J. E. Cave, six demonstrations on the contents of the Museum.

It was decided to recognize the posts of senior house-surgeon and first assistant house-surgeon at Essex County Hospital, Colchester, for the six-months surgical practice required of candidates for the Final Fellowship examination. It was also decided to renew the recognition of the post of house-surgeon at Walsall General Hospital for the six-months surgical practice required of candidates for the Final Fellowship examination, for the duration of the war.

Sir Frank Colyer was reappointed Honorary Curator of the Odontological Collection. The thirteenth Macloghlin Scholarship was awarded to John Alfred Gorton Holt of Bristol Grammar School. Miss H. B. Collard was reappointed a Leverhulme Scholar for a further year. A vote of thanks was given to Mrs. Rees-Mogg for presenting to the College a selection of 150 books from the library of her first husband, Dr. Edward Douty, F.R.C.S.

A Diploma of Fellowship was granted to R. S. Lawrie, M.B., M.R.C.P.

A Diploma of Membership was granted to J. A. Judson.

Diplomas were granted, jointly with the Royal College of Physicians of London, as follows:

DIPLOMA IN PUBLIC HEALTH.—R. Bhaskar, P. R. T. Naidu, W. Dodd.
DIPLOMA IN PSYCHOLOGICAL MEDICINE.—J. F. Cooper, H. Fleming, G. Garmany, Margaret J. Garmany, J. H. Gould, S. Leviten, P. Morris, J. Slorach, P. C. C. Tresise.
DIPLOMA IN LARYNGOLOGY AND OTOLOGY.—J. A. Harpman, C. McK. Johnston, E. Kaplan, E. C. Richardson, E. Rosenbaum.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

At recent meetings of the President and Fellows the following have been admitted Fellows of the College: J. A. D. Deeny, M.D., A. Whelton, M.D., John Duffy, M.D.

The Services

CASUALTIES IN THE MEDICAL SERVICES

Acting Surg. Lieut.-Cmdr. (D.) ROBERT DOUGLAS JOHNSTON, R.N., who was reported missing in the *Journal* of Jan. 10, is now posted as missing, presumed killed, in H.M.S. *Prince of Wales* in an Admiralty Casualty List published on July 10. He was educated at Edinburgh, where he studied for the dental profession, taking the diploma of L.D.S. in 1931. He also took the diplomas L.R.C.P.&S.Ed. and L.R.F.P.S.Glasg. in 1932. He was a member of the B.M.A.

Temp. Surg. Lieut. WILLIAM ANTHONY CAVANAGH, R.N.V.R., is posted as missing, presumed killed, in H.M.S. *Repulse* in an Admiralty Casualty List published on July 13. He was born on June 27, 1908, and was educated at Dublin, taking the L.R.C.P.&S.I. in 1934. He had practised at Greencastle, Co. Donegal, since qualification, with the exception of a brief period in London in 1938, until the outbreak of war, when he immediately entered the R.N.V.R. as prob. temp. surg. lieut.

Prisoners of War.—Major D. C. Bowie, R.A.M.C., Capt. K. P. Brown, R.A.M.C., Major E. J. Curran, R.A.M.C., War Subs. Capt. R. L. Lancaster, R.A.M.C., Capt. J. A. G. M. Lynch, R.A.M.C., Major H. G. G. Robertson, R.A.M.C., Capt. J. E. C. Robinson, R.A.M.C., Lieut.-Col. C. O. Shackleton, R.A.M.C., Col. J. T. Simson, Major J. E. Swyer, R.A.M.C.

Missing.—Major C. A. Calder, R.A.M.C., Capt. E. T. M. Smith, R.A.M.C.

DEATHS IN THE SERVICES

Surgeon Rear-Admiral GILBERT FRANCIS SYMS, R.N. (ret.), died on June 23. He was educated at Guy's Hospital and took the M.R.C.S., L.R.C.P. in 1908 and subsequently the F.R.C.S. in 1923. After serving as house-surgeon and clinical assistant and out-patient officer at Guy's he entered the Royal Navy, attained the ranks of surg. cmdr. in 1919, surg. capt. in 1931, and surg. rear-admiral in 1938, retiring early in 1942. He served during the war of 1914-18, receiving the medals. He was appointed Honorary Surgeon to the King last year. He had been professor of surgery at Haslar Hospital and in charge of the Royal Naval Hospital, Plymouth.

Col. STEPHEN FRAZER CLARK, late R.A.M.C., died at Mosman, New South Wales, in May, aged 77. He was born on July 17, 1864, and was educated at the University of Edinburgh, where he graduated M.B., C.M. in 1885. In 1904 he took the D.P.H. of the Irish Royal Colleges. Entering the Army as surgeon in 1887, he became colonel in 1915, and retired in 1919. He served in the China war of 1900 (medals) and in the war of 1914-18, in command of a general hospital in France, and was mentioned in dispatches in 1914. He also received the Serbian Order of St. Sava (Third Class) and the Croix de Guerre in 1918. He had been a member of the B.M.A. for 35 years.

Lieut.-Col. JAMES GIBSON MCNAUGHT, R.A.M.C. (ret.), died at Penzance on April 25, aged 76. He was born in Glasgow on November 13, 1865, and was educated at the University of Glasgow, where he graduated M.A. in 1887 and M.B., C.M. in 1890, proceeding M.D. four years later. He took the certificate (with medal) in tropical medicine at the University of Edinburgh in 1894, and the D.P.H. of the London Colleges in 1903. Entering the Army as surg. lieut. in 1892, he became lieut.-col. in 1914, and retired in 1920. He served in the South African War in 1901-2, taking part in operations in the Transvaal, in Cape Colony, and the Orange River Colony, and received the Queen's medal with five clasps ; and in the war of 1914-18 was mentioned in dispatches in 1914, and commanded the 13th Casualty Clearing Station during the Gallipoli campaign. He was a member of the Mediterranean Fever Commission of 1906 and was a frequent contributor on pathological and bacteriological subjects to the medical press. He had been a member of the B.M.A. since 1895.

Medical Notes in Parliament

Death Rates for Infectious Diseases

Mr. BROWN, replying to Mr. Leach on June 30, said that the death rates per 1,000,000 under 15 in England and Wales from the following diseases were, for 1939 and 1940:

	1939	1940
Diphtheria	227	265
Scarlet fever	15	12
Measles	34	95
Whooping-cough	140	78
Tuberculosis	240	264

The rates for 1940 were provisional. No rates were yet available for age groups in 1941.

On June 30 Mr. BROWN told Mr. Leach that the death rates per 1,000,000 persons living in 1938, 1939, 1940, and 1941 from small-pox, measles, scarlet fever, diphtheria, whooping-cough, enteric fever, cancer, and diabetes were as follows:

	1938	1939	1940+	1941+
Small-pox	0	—	—	—
Measles	40	7	21	28
Scarlet fever	9	4	4	3
Diphtheria	71	51	60	64
Whooping-cough	27	29	16	57
Enteric fever, including typhoid and paratyphoid	4	3	3	4
Cancer	1,665	1,620	1,662	1,670
Diabetes	173	124	129	117

The rates for 1940 and 1941 were provisional. They were calculated on the total population of England and Wales for 1939.

Children Employed on the Land

Mr. EDE, on June 23, in reply to a question on the need for adequate medical examination of school children exempted from attendance in order to engage in agricultural work in any case where there was danger of overstrain on account of a child's physical condition, gave the following information. The Defence Regulation required that "if the local authority by notice in writing served on the parent or guardian of any child so requires, the child shall not be employed in agricultural work, or, as the case may be, in agricultural work of any nature, unless he is certified by a registered medical practitioner to be physically fit to be so employed, and it shall be the duty of a child's parent or guardian to take all reasonable steps to see that he is not employed in contravention of this paragraph." In the instructions issued by his Department to local education authorities, Mr. Ede continued, the following was included: "If the authority, on information received from the school medical officer, teachers, or otherwise, has reason to doubt whether a child is physically fit to undertake the work, exemption must not be granted unless a satisfactory medical certificate, which should wherever possible be given by the school medical officer, is received."

Viscountess ASTOR asked if it was possible to give these children one hour's rest in the middle of the day. It would, she said, make a great difference to their health. Mr. EDE said that where a child was employed for the whole day there was a requirement that a sufficient period of rest should be allowed, and there was a general desire that the children should not be employed for more than half a day unless it was absolutely necessary. Mr. RHYS DAVIES said that if these children, aged 14 years and upwards, went to work in a factory they were all medically examined. Why was there this difference? Mr. EDE replied that there were not sufficient doctors available to examine all the children on the spot without such delay as would frustrate the object of obtaining the help of children on the land.

Colonial Services

Presenting the Colonial estimates on June 24, Mr. HAROLD MACMILLAN said few of the Colonies had or were likely to have for a long time so large a reservoir of qualified local candidates that the population could itself supply all the administrative, scientific, professional, and technical experts needed. A mobile force of experts in administration, medicine, agriculture, etc., was needed who would be at the disposal of the Secretary of State to be posted wherever in the Colonial Empire they were most required. Mobility was still hampered by variations in local regulations, in salary scales, and so on. Unification of the Colonial Service had been going on since 1930. Much progress had been made, but to get a fully unified and mobile service needed not only direction from the centre but financial provision to equalize conditions of employment in the poorer and the richer Colonies. The Colonial Office had Lord Hailey's gifts at its service. With the help of eminent scientists he would advise on the organization of research work over the whole field, and would have half a million pounds a year to do it with.

Dr. MORGAN said that in Jamaica conditions of treatment of venereal disease were unsatisfactory. Mr. SORENSEN said a more drastic development of Colonial Medical Services should be planned. It was appalling that not one coloured woman nurse trained in this country had secured a position as matron or sister in any of the medical establishments in West Africa.

Eyesight of Factory Workers.—Mr. MALCOLM MCCORQUODALE told Sir Francis Fremantle on June 10 that about 12,450 accidents causing eye injury were notified under the Factory Acts in 1941. There were no special arrangements of a comprehensive kind for the services of ophthalmic surgeons to be available for factory workers as such, but in a few cases factory managements had made arrangements to assist their workers in obtaining advice from such surgeons or from sight-testing opticians.

British Sick in Iraq and Persia.—On June 16 Sir THOMAS MOORE asked the Secretary of State for War what was being done with the British sick in Iran and Iraq and whether convalescents were being transferred to less trying climates. Sir JAMES GRIGG said that British general hospitals and combined British and Indian general hospitals had been established for British sick and wounded in Iraq and Persia. In addition hospital accommodation was available in the hills in India for patients recommended for a change of climate.

Lead Poisoning.—Cases of lead poisoning notified under the Factory Acts were—1,258 in 1899, 207 in 1919, and 109 in 1939.

Dental Man-power.—Mr. BROWN informed Professor Hill on July 2 that in carrying out their tasks of finding dentists for the Services the Central Dental War Committee took every care to ensure that a sufficient number of dentists were left in civil life to cope with civilian demands for dental treatment, including those arising under National Health Insurance and the School Dental Service.

Pneumonia.—During the ten years 1932 to 1941 inclusive the average number of cases of acute primary and acute influenzal pneumonia notified annually was 50,912, with a maximum figure of 65,009 cases in 1933 and a minimum of 42,312 in 1939. Mr. Brown said that chemotherapy in the treatment of pneumonia was introduced about six years ago and had come into general use since 1938.

Medical Schools.—On June 24 Sir Francis Fremantle, Capt. G. S. Elliston, Mr. Messer, and Mr. James Griffiths gave evidence before the Committee on the planning of future medical schools.

Notes in Brief

The number of cases of non-pulmonary tuberculosis notified in England and Wales during the year 1941 was 13,720. The number considered to be of bovine origin is not available.

The Public Health (England) (Tb) Regulations, 1942, were presented to Parliament on June 3.

The National Milk Scheme does not affect any powers of medical officers of health in relation to the quality of milk.

Mr. R. A. Butler proposes to ask local education authorities to provide milk and school dinners during the summer holidays. A circular on this and other matters relating to the care of children during the holidays is in course of preparation.

Medical News

Mr. C. Bowdler Henry will deliver a lecture on "The Complications and Treatment of Impacted Wisdom Teeth" at the British Dental Association, 13, Hill Street, W., on July 28 at 3 p.m. All members of the British and Allied Services will be welcome.

The Council of Epsom College have available for orphan daughters of medical practitioners "St. Anne's" Scholarships and "Squire Sprigge" Scholarships. Candidates for the St. Anne's Scholarships must be fully nine years of age, and must be orphan daughters of medical *men* who have been in independent practice in England or Wales for not less than five years. No such restrictions are laid down for the Squire Sprigge scholars. The value of each scholarship is dependent upon the means of the applicant and the locality and fees of the school selected. Forms of application can be obtained from the Secretary's Office, Epsom College, Surrey.

The Ministry of Food announces that a category 1(h) has been added to the schedule of conditions qualifying for priority milk supplies. "Patients with malignant disease, or lymphadenoma, or leukaemia, who are undergoing radiotherapy, whether by means of *x* rays or radium, and who suffer from reactions to the therapy as shown by difficulty in swallowing or digestive disturbances such as anorexia or vomiting," will be entitled to a maximum of two pints daily on the production of the necessary medical certificate, which will be valid for one month, but renewable for two further consecutive periods of one month on the production of further certificates. If another course of treatment is required after an interval, then during this course priority milk will be available to the patient on the same conditions as before. Certificates for priority supplies of eggs or milk for expectant mothers will be valid for three months at a time and renewable for further periods of three months to cover the duration of pregnancy.

The Duchess of Abercorn was present at a crowded meeting, representative of all interests, held in the Whitla Medical Institute, Belfast, on July 3. The Rt. Hon. Sir Hugh O'Neill presided and the meeting was addressed by Dr. Doris Odlum of the Child Guidance Council of Great Britain. At the close it was unanimously and enthusiastically decided to establish a Child Guidance Council for Northern Ireland. The Queen recently allocated a sum of £2,000 from the Bundles for Britain Fund towards this object.

The Association of Scientific Workers, 73, High Holborn, W.C.1 (with the collaboration of the Federation of Ayrshire Scientific Film Societies) has arranged a conference on the scientific film, to be held in two sections: in Ayr on Saturday and Sunday, August 1 and 2, and in London on Sunday, August 16. The aims of this conference are, first, to discuss the need for scientific film societies run by A.Sc.W. branches to give science films the widest possible showing, and, secondly, to draw public attention to these activities and to the need for increased and co-ordinated production of science films.

In view of the shortage of medical specialists, particularly in ear, nose, and throat work, in the south-east of Scotland, the Edinburgh Royal Infirmary has entered into an agreement with the Chalmers Hospital, the Deaconess Hospital, and the Sick Children's Hospital that the out-patient departments of the three last-named hospitals shall be closed and all out-patients will now report to the Royal Infirmary.

The King has appointed Dr. Victor W. T. McGusty, O.B.E., to be a member of the Executive Council of the colony of Fiji for a further period.

EPIDEMIOLOGICAL NOTES

Discussion of Table

There was an increase in the incidence of the majority of infectious diseases in England and Wales during the week; the outstanding increases were 1,206 for measles and 91 for dysentery. The notifications of measles, whooping-cough, and dysentery are the largest weekly totals that have been recorded for 1, 1½, and 4½ years respectively.

Measles

The 7,581 cases of measles notified during the week in England and Wales represent an increase of almost 20% on the total of the preceding week. The largest increases were those in the counties of Yorks West Riding 239, Middlesex 166, Lancashire 152, Essex 149, Surrey 128, Northumberland 94, Hampshire 76, Durham 74, London 70. Decreases were recorded in Kent and Hertfordshire of 79 and 88. The incidence of measles varied considerably throughout the country; in 11 English counties with a low incidence there were only 46 cases, and only a total of 13 in 8 Welsh counties.

For the second consecutive week there was a big decline in the notifications of measles in Scotland, where 358 fewer cases were reported than in the preceding week. In Glasgow 114 cases were notified, a decline of 363.

In Eire 97 cases, an increase of 48, were reported, and in Northern Ireland 233 cases, a decrease of 31.

Dysentery

The largest increase in the notifications of dysentery in England and Wales was due mainly to the outbreak in Cumberland, Penrith U.D.; 100 cases were notified during the week in this outbreak, which started in the preceding week with 31 cases. The only new outbreak of any size occurred in Westmorland, North Westmorland R.D. 14 cases. The largest of the other county totals were those of London 22, Lancashire 16, Surrey 15, Yorks West Riding 15, Oxfordshire 10, and Gloucestershire 10.

Small-pox

The outbreak in Glasgow appears to be effectively checked; no new cases were reported during the 5 days July 11-16. The death of a 72-year-old man brings the death roll to 6. Over half a million persons have been vaccinated, and several of the vaccination centres have been closed. In Swindon several suspected cases have been reported; no deaths have occurred in this town. The medical officer of health has stated that the response to the vaccination offer has been "deplorable."

According to the daily press a mild case of small-pox has been removed to hospital from a ship at Liverpool. The medical officer of health has taken the necessary precautions for dealing with the situation.

Returns for the Week Ending July 11

The notifications of infectious diseases in England and Wales included: scarlet fever 1,279, whooping-cough 1,390, diphtheria 768, measles 7,361, acute pneumonia 625, cerebrospinal fever 87, dysentery 155, paratyphoid 8, typhoid 4.

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 4.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942 (a)	(b)	(c)	(d)	(e)	1941 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	105	4	36	3	7	192	18	54	2	3
Deaths		—	2				2	3		
Diphtheria	728	39	171	44	21	909	37	162	26	24
Deaths	17	2	5	3	1	18	—	4	—	2
Dysentery	242	22	46	—	—	78	10	30		—
Deaths		1	—	—	—			—	—	—
Encephalitis lethargica, acute	6	—	1	—	—	5	—	3	—	—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid) fever						111	—	29	1	—
Deaths						4	—	—	—	—
Erysipelas		—	41	7	2		—	41	4	2
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years	30	2	12	5	4	26	2	4	9	3
Deaths										
Measles	7,581	815	249	97	233	8,820	284	74		1
Deaths	5	1	4	1	—	9	—	—	1	—
Ophthalmia neonatorum	83	3	5		—	82	4	16		—
Deaths										
Paratyphoid fever	14	—	2	2						
Deaths	—	—	—		—					
Pneumonia, influenzal*	734	35	5	3	8	664	31	3	3	1
Deaths (from influenza)	11	—	1	—	—	5	22	1	—	6
Pneumonia, primary		—	184	20			—	222	12	
Deaths				5	7				6	—
Polio-encephalitis, acute	2	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	7	—	1	1	—	3	—	4	—	—
Deaths		—	—				—	—		
Puerperal fever	—	—	15	4	1	2	2	16	1	1
Deaths		1					—			
Puerperal pyrexia	161	9	17		2	119	4	24		1
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,396	84	229	74	29	840	34	120	30	20
Deaths	7	—	—	—	—	1	—	—	—	—
Small-pox	—	—	9		—	—	—	—		—
Deaths	—	—	1	—	—	—	—	—	—	
Typhoid fever	4	—	1	7	1					
Deaths	1	—	—	—	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—			—	—	—
Whooping-cough	1,457	128	17	37	12	5,437	215	184		4
Deaths	7	—	—	1	—	22	2	8	1	—
Deaths (0–1 year)	282	31	51	18	20	305	18	60	28	13
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,726	527	562	165	106	4,172	503	576	181	156
Annual death rate (per 1,000 persons living)			12·6	11·0	†			12·5	12·0	†
Live births	6,083	709	921	390	283	4,577	315	883	434	176
Annual rate per 1,000 persons living			19·0	26·0	†			18·0	28·8	†
Stillbirths	227	20	19			194	13	34		
Rate per 1,000 total births (including stillborn)			20					37		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

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QUERIES AND ANSWERS

Adder Bite

Dr. C. W. WALKER (Hereford) writes: Having a child under my care suffering from adder bite, I find on looking up the subject very little information as to prognosis. Four or five fatal cases (in this country) are vouched for, and about half a dozen case histories published (Sir T. Oliver's case and Dr. M. R. Taylor's series). I should be most grateful to any doctor who has had this rather rare accident (British adder bite) under his care in the past for information as to the duration of the severe symptoms, and of the subsequent swelling and disability of the bitten limb.

Incidence of Migraine

Dr. M. INFELD (London, N.W.6) writes: I am interested in data concerning the frequency of migraine in the United Kingdom. Are there statistics in this regard, official ones or from any out-patient departments?

An Unusual Accident

L. P. S. writes: A cyclist collided with a light horse-drawn vehicle. The shaft, about the thickness of the wrist, transfixed the extreme upper part of his thigh and broke off. I was called in to operate 6 hours after the accident. The shaft was *in situ* and entered at the inner side, passed through the centre of the thigh, and the end caused a bulge on the skin on the outer side. An anaesthetic was given and the shaft was pulled out with some difficulty as it was firmly embedded, but there was no resultant haemorrhage. A generous counter-opening was made, the entrance wound was excised, the channel of the wound was cleaned so far as circumstances would permit, sulphanilamide powder was introduced throughout the whole length of the wound, and a through-and-through drainage tube was placed. Sulphapyridine—2 tablets every 4 hours—was given subsequently. I was informed that all seemed to be going well until the fifth day, when the whole thigh swelled up from infection and the patient died of septicaemia on the sixth day. Suggestions would be welcomed as to what might be considered the correct treatment of such a case.

Income Tax

Variations in Earnings

P. B.'s earnings in the five years to April, 1942, were respectively £200, £100, £70, £250, and £510. He has *apparently* been assessed for the five years ending April, 1943, on the amounts of £200, £100, £250, £250, and £510. Is this correct?

*** It is not possible to say without knowing why the earnings dropped to £70 in 1939-40, but on the face of the figures P. B. does not seem to have suffered an excess of tax over the whole period. (A cost-of-living bonus received in cash is liable to income tax.)

Free Quarters as an Officer of the Crown

F. is a Civil Servant (prison M.O.) with free quarters valued at £50 per annum and is assessed to include tax on that amount. Is this correct?

*** Yes. The liability arises under the special rules applicable to Crown property, and the facts accordingly lead to a result different from those where the "occupier" of the whole premises is a private individual, or hospital authority, etc.

Diminution in Earned Income

J. M.'s earned income during the actual year ended March 30, 1942, was £750; he has been assessed on £1,250. Has he any remedy?

*** Yes. If the aggregate actual earned income is less than the amount as assessed by more than 20% the individual can claim an adjustment of the assessment to the "actual" amount.

LETTERS, NOTES, ETC.

Russian-English Technical Dictionary

Sir JOHN RUSSELL, F.R.S. (chairman, Anglo-Soviet Scientific Collaboration Subcommittee) writes: There is an urgent demand at the present time for an up-to-date Russian-English dictionary of scientific and technical terms. It is known that a number of Russian-English glossaries of specific terms have been compiled by various scientific institutions and individuals, and it is thought that it would be extremely helpful to scientists and technical translators if copies of these glossaries could be collected and placed in the Science Library in London, where one complete set could be consulted. Will, therefore, any institution or individual who has compiled a glossary of Russian scientific or technical terms, whether printed or in MS., please send a copy to the Secretary of my subcommittee, the British Council, 3, Hanover Street, W.1, who will collect these for the Science Library. It is hoped at a later stage to compile a large dictionary, but the immediate aim is to collect the different glossaries in one place where they can be consulted. Each glossary will be known by the name of its compiler.

Herpes Zoster and Varicella

Dr. F. C. GLADSTONE (Cirencester) writes: Dr. S. L. Brimblecombe's letter (July 11, p. 60) on herpes zoster and varicella raises the interesting question, Should a case of herpes zoster be isolated? As medical officer to a large boys' school I have no hesitation in saying Yes. The following experience will support my contention. Some years ago the head master's children developed varicella, their nurse having had an attack of herpes zoster ten days previously. I had warned the head master what to expect, and as this happened in the holidays we congratulated ourselves that the school had been spared an epidemic of varicella, but this was not to be. One of the boys was allowed to return to school with a mild attack of herpes zoster; his parents had not reported the matter. Although this boy was isolated a few hours after his return, within three weeks the school was enjoying an epidemic of varicella.

Treatment of Scabies

Mr. C. KLATZKIN, B.Pharm. (Enfield), writes: May I, as a pharmacist, comment on one paragraph of the article on the treatment of scabies by Dr. Kenneth Mellanby, Major C. G. Johnson, and Mr. W. C. Bartley (July 4, p. 1). The authors mention the use of a sulphur vanishing cream. Most vanishing creams are essentially soaps, prepared by the interaction of stearic acid and an alkali; one of the best of these is ammonium stearate. A soap lather and a vanishing cream do not appear to me to be very different. For this reason I would not expect a higher percentage of cures in the treatment of scabies to result from the use of a sulphur vanishing cream than from the use of sulphur lather tablets prepared with soap. A formula suggesting this method of preparing sulphur lather tablets was published in the *Pharmaceutical Journal* of Jan. 31, 1942.

Lichen Urticatus

Dr. G. E. ELLIS (Gillingham, Dorset) writes: About five years ago I wrote a letter to the *Journal* (Nov. 6, 1937, p. 948) to show the remarkable effect upon lichen urticatus of small doses of potassium citrate. No notice was taken of the letter at the time, nor have I seen any reference to the subject since. The seasonal increase of this troublesome condition has now begun, and I should therefore like to bring this simple remedy again to the notice of practitioners, and to urge them to give it a trial. Five- to ten-grain doses 3 times a day will clear the greater majority of cases in 3 days.

MEDICINE 100 YEARS AGO

Extract from the *Provincial Medical Journal* for July 23, 1842:

"The object of the Colleges of Physicians and Surgeons has been defeated. For their own sakes we could have wished that they had been less precipitate—less anxious for their own interests and more ready to sacrifice personal considerations for public good and the benefit of the profession which they affect to represent. Their disappointment, however, may lead to useful results. Defeated in their attempt to obtain fresh powers from the Legislature at the close of the session, the colleges will perhaps be more inclined to listen to the suggestions which emanate from the *real* representatives of the profession; to act with the associations (for *we* never advocated the destruction of the medical corporations) for the benefit of all, instead of losing their legitimate share of power, by attempting to grasp too much; in a word, to place themselves frankly and openly at the head of the movement, instead of involving themselves in ruin by a useless attempt to divert or disperse a force which they cannot resist."